University of Zurich[UZH]

Master's thesis
presented to the Faculty of Arts and Social Sciences
of the University of Zurich
for the degree of
Master of Arts UZH in Social Sciences

The Actual Effect of the Representative Role: A Methodological Clarification for Representation Studies

Author: Giorgio Cassina
Student ID Nr.: 14-702-401

Examiner: Prof. Dr. Heiko Rauhut
Supervisor: M. Sc. Alexander Ehlert

Institute of Sociology, University of Zurich

Submission date: 05.06.2019

Abstract

Previous studies on the representative role compare representatives' behaviors with individuals' behaviors. Nevertheless, since representatives are a particular type of group members, previous designs inevitably did not distinguish between in-group favoritism effects and the actual effect of the representative role. Carrying on this methodological criticism, the present thesis suggests a new experimental design aimed at disentangling the two effects. Specifically, this study's aim is to causally determine the effect of the representative role on individuals' cooperation and understand which mechanisms foster the representation effect. To do so, an online experiment was conducted on Amazon Mechanical Turk. The results show that neither the in-group favoritism effect nor the effect of the representative role alone seem to have any significant influence on participants' cooperative behaviors, but by conducting the same analysis done by previous studies a decrease in cooperation for representatives can be detected. However, previous interpretations are criticized and the decrease in cooperation is attributed to the interaction between the representation effect and the in-group favoritism effect and not to the representation effect alone. Additionally, self-reported data collected in the post-experimental survey displays that representatives do feel accountable for the represented group mates and, therefore, are willing to equally share their payoff. Finally, for future studies, this research suggests the use of more efficient minimal group procedures to better understand the isolated representation effect and the use of actual behaviors to investigate the mechanisms that lie at the basis of the representative role.

Keywords: representative role, in-group favoritism, Amazon Mechanical Turk (MTurk), responsibility, accountability, implicit justification, minimal group, intergroup interaction, imagination procedure, cooperation.

Acknowledgments

I would like to start by thanking the Institute of Sociology of the University of Zurich for economically supporting my thesis.
I thank Professor Heiko Rauhut for giving me the possibility to write my master thesis with him. I am also grateful to Alexander Ehlert for the patience and the time he spent helping me.
I would like to thank Dr. Stefan Wehrli from the Decision Science Laboratory of the ETH Zurich for his availability and for providing me with the infrastructure to conduct the experiment. I am further thankful to Oliver Brägger for the help regarding the programming and the conduction of the experiment.
I would like to show my gratitude to Isabelle Sieber for all the time she spent and the care she took revising this thesis.
I am really thankful to my family for the constant support and presence all these years.
Finally, I would like to thank Camilla for her presence, priceless support and for being to me the person she is.

Table of Content

List of Tables

List of Figures

1 Introduction

In real life, individuals rarely behave in a neutral environment; actors' decisions are often influenced by the context in which they find themselves. As a matter of fact, actors often enact roles in society, which influence their behaviors. Indeed, individuals can be responsible for their families, they can be managers of corporations or they can represent nations and behave accordingly. All these situations actually display how actors often represent someone and how the representative role is far from irrelevant in our society and in our everyday life. Being a representative means having the responsibility to decide not only on behalf of yourself, but also for a group or a person you are representing. Indeed, as representatives, individuals do not only act on behalf of their own interests, but they also have to consider the interests of the people they represent. What is of interest in these situations is to answer to the question of whether the representative role affects the way in which individuals behave in relation to others or influences the way in which individuals cooperate[1]. Studies on cooperation demonstrated that some people care about being cooperative (Fehr and Schmidt 1999) and that they like to be perceived as fair (Andreoni and Bernheim 2009). However, by changing the context of the interaction and by making individuals be responsible for a group, studies displayed a decrease in cooperation (Song, Cadsby, and Morris 2004; Diekmann 1997). Thus, the representative role seemed to influence the way in which actors cooperate.

Nevertheless, there are no findings that demonstrate that there is a difference between representatives' and simple group members' behaviors. Therefore, the literature that tries to study the effect of the representative role on individuals' behaviors suffers from a methodological shortcoming: to causally determine the effect of the representative role, representatives' cooperative behaviors are compared to individuals' behaviors. This comparison does not consider the fact that representatives are members of a group with specific functions. Comparing representatives' with simple individuals' cooperation level does not isolate the effect of the representative role from the well-known in-group favoritism effect. The in-group favoritism effect infers that individuals prefer their in-group members to out-group members (Hewstone, Rubin, and Willis 2002). Thus, the existence of an intergroup context alone influences individuals' cooperative behaviors. To causally establish the effect of the representative role, then, representatives' cooperative behaviors have to be compared to group members' behaviors.

[1] With representatives' cooperation – and group members' cooperation later in the text – is intended cooperation with non-represented group members or out-group members.

The aim of this thesis is to compensate for this shortcoming by investigating the real effect of the representative role on individuals' cooperation level and detaching it from the in-group favoritism effect. In order to do so, I suggest a new experimental design and test it in an online experiment on Amazon Mechanical Turk. The experiment consists in a dictator game conducted using the strategy method and a post-experimental survey allowing the collection of additional information. Furthermore, my interest also lies in researching the way in which the representative role influences individuals' cooperation. Indeed, I test two possible mechanisms related to the representative role against each other: the accountability and the implicit justification mechanisms. Thus, by addressing the methodological shortcoming of previous studies, this thesis tries to answer two questions: Does being a representative of a group member make you less cooperative? And which mechanism lies behind the effect that the representative role has on individuals' cooperation?

The results reject the influence of both the in-group favoritism effect and the effect of the representative role on individuals' cooperation level separately. This suggests that group members' cooperation level does not differ neither from normal individuals' nor from representatives' cooperative behaviors. However, a discussion on the procedure applied to establish an intergroup context will question these results in relation to the inefficacy of the experimental treatment used. Nevertheless, by conducting the same comparison used in previous studies, representatives behaving in an intergroup context are found to be significantly less cooperative than individuals interacting in an interpersonal situation. On the basis of the developed methodological criticism, a new interpretation of these results is suggested: the influence is caused by the interaction between the in-group favoritism effect and the effect of the representative role, not by the representation effect alone.

Finally, the findings support the thesis that at the basis of the effect of representation lies the accountability mechanism. Representatives seem to feel accountable for the represented in-group members and care about their payoff.

The thesis will start with a contextualization of the research focus within the literature on representation. Subsequently, the theoretical part will address the social identity theory (Tajfel and Turner 1979) and the two theoretical mechanisms related to the representative role. In the following, the methodological section, the most suitable design aimed at testing the developed hypotheses will be presented; hence, the method used, the setting and the structure of the online experiment will be addressed. In the subsequent chapters, the results will be displayed and discussed. Finally, the conclusion will suggest some possible future studies based on aspects which surfaced in this paper.

2 The State of the Literature

The effect of the representative role has been studied for a long time from different theoretical perspectives. Specifically, there are two main theoretical traditions investigating the phenomenon of representation: negotiation studies and studies fostering game theoretical approaches.

On the one hand, the first theoretical tradition is focused on negotiations and the resolution of conflicts. These studies conduct experiments portraying situations in which representatives have to agree on distributional issues (Druckman, Solomon, and Zechmeister 1972; Trötschel, Hüffmeier, and Loschelder 2010) or agree on which of the groups' solution to a problem is the best (Blake and Mouton 1961). Assuming that representatives feel responsible for their in-group members, the effect that being a representative has on the time needed to reach an agreement, the numbers of deadlocks occurring in the negotiations or the equality of the compromise is investigated (for an overview see Druckman 1994).

However, in this literature, the analysis of the representative role has been providing inconsistent results. Indeed, some studies on negotiators' behavior supported the thesis that accountability to constituents affects the competitiveness of representatives' behaviors (Folmer et al. 2012; Blake and Mouton 1961; Druckman, Solomon, and Zechmeister 1972; Benton and Druckman 1974), whereas other studies display the opposite effect demonstrating that representatives feel freer to compromise (Haccoun and Klimoski 1975) or, finally, that accountability to a constituency leads to more flexible attitudes (Enzle, Harvey, and Wright 1992).

The inconsistency of the findings can be explained by the presence of situational and contextual characteristics that may affect compromising behaviors in negotiation (Druckman 1994). In his meta-analysis on the determinants of compromising behaviors in negotiations, Druckman (1994) discusses a number of situational variables that can interact with the effect of being a representative on individuals' behaviors. These moderating factors are variables such as the visibility of the negotiation, the time pressure, the opponent's strategy, the opportunity to organize a strategy before the negotiation (Druckman 1994) or again the representative's selection method (Haccoun and Klimoski 1975), the level of accountability (Klimoski and Ash 1974), the level of in-group cohesiveness (Klimoski 1972) or the representative's position within the group (Steinel et al. 2010). Thus, in order to understand the real effect that the representative role has, researchers should consider the influence of these moderators and try to rule them out.

On the other hand, the second strand of the literature focuses more on the effect that the representative role has on general individuals' behaviors. A study by Charness and Jackson (2009) demonstrates that representatives display less risky behaviors then individuals. Song (2008) shows

that group representatives trust less and reciprocate less. Further studies show that representatives exhibit less other-regarding behaviors or less cooperative behaviors than individuals behaving just on their own behalf (Song, Cadsby, and Morris 2004; Diekmann 1997; Humphrey and Renner 2011). Finally some scholars show that there is a gender difference in the effect of representation on individuals' cooperation (Hauge and Røgeberg 2014). These studies investigate the effect that being representatives has on individuals' cooperative behaviors in classical experimental settings such as the public good game, the prisoner's dilemma or the dictator game.

Of these experimental settings, the dictator game appears particularly suitable as an answer to the problematic of situational moderators in negotiation studies, given that its simplicity removes representatives' strategic motivations (Song, Cadsby, and Morris 2004, 341). This allows the consideration of individuals' behaviors towards others (individuals' intentions) independently from the interaction situation (i.e. ruling out possible confounders presented in negotiation and interaction settings).

Ultimately, this thesis wants to contribute to the existent literature, by considering both perspectives and suggesting a new approach aimed at overcoming the methodological problems encountered. Hence, the next chapter will explain how the thesis is intended to contribute to this literature.

3 Research Focus

Following Demoulin and De Dreu's plea to integrate research on interpersonal negotiation with the study of intergroup relations (2010), my aim is to consider the existing studies and focus on the methodological shortcoming I detected. The existence of this methodological shortcoming does not allow the isolation of the causal effect of the representative role as well as its influences; therefore, the results obtained from previous studies could be biased. To my knowledge there is no study that clearly and explicitly tries to disentangle the effect of being a representative from that of in-group favoritism. The differentiation between the two effects is important in order to be able to assert that the role of the representative has an influence on individuals' behavior. As Trötschel, Hüffmeier, and Loschelder (2010) demonstrated, the situational salience of intergroup characteristics suffices to increase the negotiators' competitiveness and has a detrimental effect on negotiation. Furthermore, other studies on intergroup relations show an increase in discriminatory behaviors in comparison to interpersonal relations (for a review see Everett, Faber, and Crockett 2015). Thus, there is the danger that the effect of being a representative is confused with identity-based intergroup effects making previous studies overestimate the real representation effect. Indeed, the common procedure in the literature is to compare individuals' behaviors in interpersonal situations with representatives' behaviors in intergroup situations[2]. However, this comparison does not detach representation effects from intergroup bias effects. On the contrary, in order to understand the real effect of representation on individuals' behavior, the comparison should include a situation of intergroup interaction between group members that are not representing their groups, but just themselves.

The studies most closely related to my criticism are Song, Cadsby and Morris' (2004) and Diekmann's (1997). Song, Cadsby and Morris (2004) conducted a dictator game in order to compare the other-regarding behaviors of females and males acting as individuals and as representatives. To compare individuals' and representatives' behaviors, the authors chose the following experimental design: before conducting the actual dictator game in both the individual and the representative conditions, the subjects participated in a group affinity task while being divided into pairs (i.e. three short riddles and a multiple-choice reading comprehension question). The aim of this group affinity task was to create a sense of group familiarity (Song, Cadsby, and Morris 2004) useful to frame an intergroup context. However, the experiment was designed in a way that made intergroup characteristics salient in the representative condition, whereas in the

[2] With 'interpersonal situations' is meant an interaction between two individuals where no group characteristics are salient. While intergroup situations between representatives considers an interaction between two representatives of two different groups. In this case group characteristics are inevitably salient.

individual condition these characteristics were not salient. Thus, the procedure applied in Song, Cadsby and Morris' study (2004) does not allow for the detachment of in-group favoritism and representative effects.

The other study conducted by Diekmann (1997) compares individuals' and representatives' allocation of resources in a competitive set up. The experimental design was constructed in two parts: in the first part, subjects competed in a production task either individually (for the individual condition) or in groups (for the representative condition); in the subsequent part, subjects participated in the dictator game either individually or as representatives (Diekmann 1997). However, in this experimental situation, the contextual feature of competition is not enough to make intergroup characteristics salient for singular individuals. Indeed, comparing individuals' behaviors in competition and representatives of groups in competitions does not rule out the possibility that the actual differences in behaviors are only due to the in-group favoritism effect.

Thus, to my knowledge there is no previous research that systematically investigates the real causal relation between the representative role and individuals' cooperation level. As previously discussed, in order to avoid the moderator effects of situational variables present in interaction settings, I analyze the effect of the representative role on individuals' cooperation conducting a dictator game comparing three conditions: a situation of interpersonal interaction between two individuals, one with an intergroup interaction between two members of different groups and a final situation of intergroup interaction between two representatives. The significance of this study, then, lies on its aim to clarify and elucidate the phenomenon related to being a representative and its causal relationship with individuals' cooperative behaviors.

In addition to the differentiation between in-group favoritism and representative effects, it will also be theoretically distinguished between two mechanisms that can explain how the role of representative influences individuals' cooperative behaviors. The first mechanism is related to representatives' accountability towards their in-group members (Folmer et al. 2012), whereas the second is based on the implicit justification of discrimination that allows the representative role (Diekmann 1997). It will be tested how the two mechanisms are related with the representative role by collecting self-reported data through the dictator game.

To sum up, the present research's aim is twofold: (1) to investigate the effect that being a representative has on individuals' cooperative behavior by detaching it from identity-based intergroup effects and (2) to investigate which mechanism lies behind the effect that the representative role has on individuals' cooperation.

The following section will present theoretical argumentations asserting a difference between in-group favoritism effects and representative effects and display a decrease in cooperation for the

representative in comparison to group members on the basis of two possible contrasting mechanisms.

4 Theoretical Framework

In order to differentiate the effect of representation from identity-based intergroup effects, the first thing to do is to understand how an intergroup context affects individuals' behaviors and creates the mechanism of in-group favoritism. Subsequently, I will theoretically explain how being a representative influences individuals' behavior. Two different mechanisms that can account for the representative effect will be suggested. Finally, in order to distinguish between the two mechanisms they will be compared in relation to representatives' fairness towards their in-group members.

4.1 Social Identity Theory

Since representative interactions are a particular case of intergroup relations, in this section the theoretical mechanisms of intergroup bias following the social identity theory will be elucidated. Intergroup bias is the phenomenon through which members of the same group (in-group) are favored over members of other groups (out-groups) (Hewstone, Rubin, and Willis 2002). The existing social psychology literature recognizes some explanatory mechanisms for the emergence of intergroup bias (Hewstone, Rubin, and Willis 2002). Of these theories, one of the most prominent ones is the social identity theory developed by Tajfel and Turner (1979).

The primary distinction made by the social identity theory is that between interpersonal and intergroup interaction: interpersonal interactions are determined by the personal characteristics of the interacting individuals and not by the social groups they belong to; whereas intergroup interactions are determined by their role as members of a certain social group (Tajfel and Turner 1979, 34). According to Tajfel and Turner a social group is defined as:

> "[…] a collection of individuals who perceive themselves to be members of the same social category, share some emotional involvement in this common definition of themselves, and achieve some degree of social consensus about the evaluation of their group and of their membership of it." (Tajfel and Turner 1979, 40)

Indeed, in social situations where intergroup characteristics are salient and relevant, individuals will perceive their role as group members interacting with an out-group member and will behave accordingly (Tajfel and Turner 1979). Thus, the contextual salience of the intergroup interaction and individuals' perception of their membership to a group are important features which transform interpersonal relations towards intergroup ones (Tajfel and Turner 1979, 36).

Furthermore, individuals' categorization as group members provides them with a social identification: being member of a group provides a social identity; it allows for the individuals' orientation and self-definition in relation to others (Tajfel and Turner 1979, 40). Given the psychological mechanisms related to the fact that individuals strive to maintain or improve their self-esteem and that their social identity affects their self-concept, the basic assumption fostered by

the social identity theory is that individuals evaluate positively their in-group in comparison to out-groups in order to differentiate themselves from others (Tajfel and Turner 1979, 40–41). Intergroup discrimination occurs, then, because individuals that identify themselves as members of a group need to maintain or increase their social identity by positively differentiating their in-group from a relevant out-group. This line of reasoning leads to the first hypothesis:

Hypothesis 1: In situations of intergroup relations conducted by two members of different groups, subjects are less cooperative towards out-group members than in situations of interpersonal relations.

This theoretical explanation is valid for both simple group members and group members with special functions such as representatives. In comparison to interpersonal situations, then, it suffices to interact with an out-group member to be less cooperative. In the following section I will illustrate two theoretical mechanisms, which assume that the representative role further decreases cooperation.

4.2 Representative Role: the Accountability Effect

Representatives' interactions are not only contextualized in intergroup relations, they also face the pressure of accountability towards the group members they are responsible for. Thus, the mechanisms that lay at the basis of the concept of accountability have to be considered.

As a universal feature of the decisional context, feeling responsible means that individuals are held accountable for what they do (Tetlock 1992). Indeed, accountability is a mechanism that fosters social and cultural conformity (Lerner and Tetlock 1999). Accountability refers to the implicitly or explicitly perceived expectation to justify one's behavior to an audience (Tetlock 1992). The audience, then, evaluates individuals' behaviors on the basis of shared social norms and prescriptions. These evaluations of behaviors and the attribution of responsibility are based on three situational elements of accountability: prescriptions, the specific event and actors' identities (Schlenker et al. 1994). Prescriptions are general rules for conduct such as informal and formal social norm, law and codes (Schlenker et al. 1994). Events are the unit of measurement for evaluating actors' behaviors and the consequences of these (Schlenker et al. 1994). Finally, actors' identities refers to the social roles and identities relevant to the situation (Schlenker et al. 1994). Accountability is then influenced by the relevance of the three characteristics for the actor and the evaluator and is characterized by the strength of the linkages between the three elements as perceived by the evaluator of a certain behavior (Schlenker et al. 1994). Indeed, the three

characteristics are connected to each other: events are influenced by the prescriptions related to them, prescriptions often are linked to roles and social identities and are perceived through them and the connection of actors to the event is determined by their identity (Schlenker et al. 1994). The clearer the expectation of a certain behavior is – given the linkage between the event, prescriptions and actors' identities – the more individuals are accountable to act accordingly. Thus, accountability influences individuals' actions because being held responsible for an event affects actors' self-perception and their social identity (Schlenker et al. 1994). Indeed, the impact of the event on individuals' identity is related to the level of responsibility they have (Schlenker et al. 1994). Ascertaining an actor's responsibility for an event means to recognize that the event will affect the audience's evaluation and, thus, the actor's identity (Schlenker et al. 1994).

In the particular case of the representative role, represented individuals will evaluate representatives' behaviors on the basis of their social identity of in-group members and of the existence of relevant social norms for the group. As displayed in the previous section, a fundamental social norm for intergroup relationships is the in-group favoritism norm. Therefore, following this social norm, represented individuals will expect representatives to favor them over out-group members. The fact that representatives are accountable for the outcomes of their behaviors leads them to consider their identity in relation to the members of their in-group and their expectations. In order to maintain a positive social identity, representatives will increasingly follow the in-group favoritism norm. Thus, in contrast to intergroup interactions between two group members of different groups where the in-group favoritism norm influences individuals' behavior, the accountability representatives experience towards their in-group members leads them to comply even more to the in-group favoritism norm and raises their out-group discrimination even more.

To sum up, the role that representatives have – as accountable for the well-being of in-group members – affects their cooperative behavior making them discriminate out-group members. Therefore, following this conclusion, the second hypothesis presumes that:

Hypothesis 2: In situations of intergroup relations conducted by representatives, subjects are less cooperative towards out-group members than in situations of intergroup relations conducted by two members of different groups.

Therefore, when considering individuals' identity in interactions it is important to include the role that accountability has on the individual choice of behavior. In situations where individuals' identities are fundamental such as in intergroup studies, the effect that accountability plays towards in-groups is a fundamental mechanism that further influences individuals' behaviors.

4.3 Representative Role: the 'Implicit Justification' Mechanism

The literature on dishonesty can provide a contrasting theoretical mechanism in relation to the effect that the representative role has on individuals' behaviors. Following Mazar, Amir and Ariely (2008), individuals are likely to undertake dishonest behaviors when they can maintain a positive self-concept. In order to maintain their positive self-concept, therefore, individuals try to find justifications for their actions (Mazar, Amir, and Ariely 2008). Individuals that have clearly defined goals, then, legitimate their actions by constructing rational justification in order to persuade themselves and others (Kunda 1990, 482). However, justifications of a certain behavior are determined by the possibility to find evidence that favors it (Kunda 1990, 483). Thus, individuals engage in dishonest behavior to the extent that they can come up with a justification based on possible and reasonable motivations that allows them to maintain a positive self-concept.

Following the literature on dishonesty, in the context of cooperation, where a social norm of equity and prosociality exists (Andreoni and Bernheim 2009), behaviors that do not comply to prosocial standards should be justified in order to be perceived as legitimate. It should be noted that self-interested motives are not defined here as dishonest, but following the logic provided by the previous argument, these behaviors violate a social norm and should be, therefore, justifiable. However, studies on fairness display also that there is an egocentric bias in the perception of payments allocations (Greenberg 1983). Because of the ambiguity that subsists around the concept of fairness, this bias is especially relevant when self-interest and fair motivations are compared (Reis 1987). Indeed, in these situations the ambiguity around what is a fair behavior allows multiple interpretations of fairness and, therefore, the possibility to justify self-interested actions (Diekmann 1997, 5). Hence, already in an interpersonal context, individuals' self-interested behaviors can be justified.

In relation to the representative role, there are empirical evidences that show that individuals are more likely to be dishonest pursuing their self-interest when others can benefit from their cheating (Gino and Pierce 2009; Gino, Ayal, and Ariely 2013; Wiltermuth 2011). Particularly, analyzing the effect of the representative role on individuals' choices of resources allocation, Diekmann (1997) assumed that behaviors perceived as unfair but that are implicitly justified by situational features are more likely to be enacted especially if they favor the self. Indeed, she displayed that representatives are less cooperative because they feel justified in their action, given that their in-group members will benefit from it. Thus, in comparison to an interpersonal context where self-interested behaviors can be justified, enacting the representative role in itself further justifies individuals' decision to unequally distribute resources with an out-group. Specifically, the social norm of in-group favoritism justifies representatives' selfishness because of the consequence

that it has on the members of their group. Given the implicit legitimation of caring for in-group members, being a representative allows carrying on selfish motivations and increasingly discriminate out-group members.

To sum up, the elucidated theoretical mechanism also confirms hypothesis 2. However, in order to understand individuals' motivations, it is important to distinguish between the two competing mechanisms. Thus, the aim of the next section is to illustrate what distinguishes the two explanations and in what way it is possible to grasp how the representative role influences individuals' behaviors.

4.4 Accountability or Implicit Justification?

Both theoretical mechanisms assume a decrease in cooperation (or an increase in out-group discrimination) for individuals enacting the role of representatives. However, the two arguments are different in regards to the level of importance that representatives direct towards the individuals who are dependent on them. While the accountability mechanism assumes that representatives care about their in-group members and therefore discriminate the out-group, the implicit justification mechanism asserts that the role of representative is used as a means to justify selfish motives.

Therefore, on the one hand, when following the accountability argument, it is expected that the role as in-group member enacted by individuals in intergroup relation becomes even more important when the accountability mechanism is added to the situation. The role of the representative makes individuals be accountable for people dependent on them and therefore increases the relevance of the implicit in-group favoritism norm. In these situations, not only do subjects want to differentiate themselves from the out-group members, but they also want to fulfill their in-group expectations about their role in the interaction and protect their social identity. Consequently, representatives are motivated to be fair towards their in-group members.

Hypothesis 3: Representatives feel accountable for their in-group members and therefore will be cooperative.

On the other hand, when following the implicit justification argument, it is expected that out-group discrimination be based on the role's contextual justification, which excuses selfishness. Thus, it is suggested that because the intergroup context is useful only for legitimating selfish motivations, representatives place more relevance towards their personal gain rather than their in-group gain.

This line of reasoning assumes that representatives are less cooperative with their in-group members.

Hypothesis 4: The representative role implicitly allows the justification of the pursuit of their selfish interests; therefore, they will be less cooperative with their in-group members.

This part focused on theoretically disentangling two effects, which were not clearly distinguished in previous studies; namely, the effect of being a representative and the in-group favoritism effect. In addition to that, two theoretical mechanisms related to the representative role were displayed.

The theoretical detachment of the effects previously confused calls for a methodological reorientation in order to causally determine the actual effect of the representative role on individuals' cooperation. In the following section, it will be shown how this thesis methodologically distinguishes itself from the existent literature and how the causal relation between the representation effect and individuals' cooperation will be investigated.

5 Methodology

In this section I will display the structure of the experiment in detail and the research design that I judge most suitable to analyze my research questions. Since I decided to carry out an online experiment, prior to discussing the experimental design, I will focus on a methodological discussion on the relevance of the experimental inquiry for the analysis of causation and the advantages and disadvantages of conducting online experiments. Subsequently, the experimental structure will be displayed: I will address the economic game and the procedure used to collect the data. Finally, I will explain how the variables in the hypotheses and the main control variables have been operationalized.

5.1 Experiments: the Golden Standard for Causal Inference

The discourse on causation has a long philosophical and empirical history where different understandings of how a causal relationship can be defined and how it can be analyzed intertwine with each other. However, the counterfactual theoretical framework is one of the most influential views on causation. From a counterfactual perspective, a cause *C* can be defined the cause of an outcome *O* only when, in the absence of *C*, *O* will have never occurred. Hence, to ascertain a causal relationship between *C* and *O*, one needs to verify what happens in the absence of *C*. Unfortunately, comparing the factual with the counterfactual is only philosophically possible since once something happens it cannot *un*happen. However, the closest thing to a counterfactual proof can be achieved through the manipulation of the cause in experimental methods.

The most suitable method to investigate a causal relationship is the randomized experimental design. Randomized experiments are defined as the golden standard for analyzing causal inference due to the fact that the random assignment of individuals to the treatment, or the control condition, removes the influence of possible unobserved confounders; therefore, it allows for a causal analysis close to counterfactuality (Gerber and Green 2012). The problem caused by the unobserved confounders – called selection bias – considers the fact that treated individuals would still differ from individuals in the control group absent the treatment (Angrist and Pischke 2009).

Methodologically, this is precisely what the criticism towards previous studies, which was highlighted in this thesis, is about; namely, that assigning individuals to the intergroup interaction treatment between representatives and comparing them with individuals in interpersonal interactions [see arrow (1) in figure 1a] inevitably positions them into an intergroup condition, which influences the causal effect solely by the fact of them being representatives. Thus, I suggest adding to the comparison a further control group where the salience of intergroup interaction is

present but where the effect of being a representative is absent (figure 1b, where the groups are indicated in colors). This will provide an understanding of the real effect that being a representative has on individuals' cooperation behavior by controlling the influence of an identity-based intergroup effect [arrow (3) in figure 1b].

Figure 1a shows that the findings of previous causal analysis do not consider the in-group favoritism effect related to the construction of an intergroup situation. However, as figure 1b displays, the methodological approach proposed in this research does consider the in-group favoritism effect. Therefore, I assert that the real effect of the representative role is captured by the comparison illustrated with arrow (3) and not the comparison displayed with arrow (1) as prior studies suggested. However, it is possible that the comparison shown with arrow (3) does not have any effect and that the comparisons of arrow (1) and (2) exhibit the same effect. This would prove that previous findings on the representative roles were just due to the in-group favoritism effect.

Nevertheless, I suppose that there exists a difference between the intergroup condition and the intergroup condition between representatives. Thus, applying the method proposed in figure 1b, will shed light into the effect of the representative role and it will show whether it exists or whether previous studies overestimated its strength.

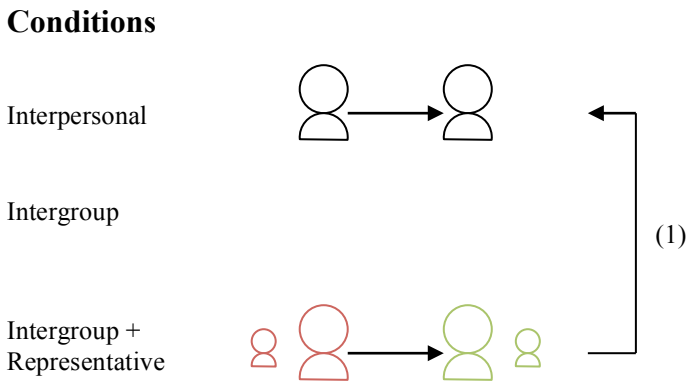


Figure 1a: Previous causal analysis.

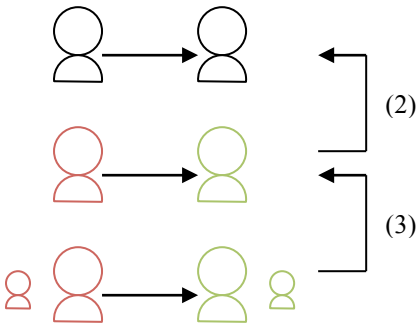


Figure 1b: New approach to causal analysis.

My analysis of the causal relationship between being a representative and individuals' cooperative behaviors is not conducted in the classical experimental setting (i.e. laboratory), but is conducted online. Thus, before addressing the experimental design *per se*, I first have to discuss implications connected to this experimental setting, which is increasingly used. This means that I have to discuss the software used to program the experiment and the platform in which it is implemented.

5.2 oTree: A Platform for Online Experiments

With the increasing establishment of experimental research in economics, psychology and also within the social sciences and with the raising importance of digital technologies during the last years, the development of an online and versatile experimental software was a matter of time. This experimental software presented itself in the guise of oTree, an online and open-source platform for field, laboratory and online experiments (Chen, Schonger, and Wickens 2016). oTree provides flexibility in that it is independent from any digital devices (it can be run on computer, tablets and smartphones) as well as from the major operating systems (Windows, Mac, Android and Linux) and it requires only a connection to a server and a browser to conduct the experiment (Chen, Schonger, and Wickens 2016). The programming language used in oTree is Python, a common open-source language used in science with a solid community of users providing useful solutions (Chen, Schonger, and Wickens 2016). Furthermore, oTree itself is open-source and has a scientific community of users.

The possibilities that its features provide to researchers, allows to enhance the external validity of experimental studies, which are still mainly conducted in university laboratories with Western students. Indeed, online experiments overcome the difficulties of reaching many and different subjects. Furthermore, the strength of oTree also lies in the possibility of interacting with Amazon Mechanical Turk (MTurk) a common platform used to conduct online experiments (Chen, Schonger, and Wickens 2016).

The programming versatility and the simple applicability of experiments conducted with the oTree platform allowed me to conduct the experiment on Amazon Mechanical Turk (MTurk). In the following section, this popular platform for online experiments will be presented and its advantages and disadvantages will be discussed.

5.3 Online Experiments on Amazon Mechanical Turk

> "Just as television shows are not filmed plays, online experiments are not simply laboratory experiments conducted online." (Horton, Rand, and Zeckhauser 2011, 401)

Amazon Mechanical Turk started in 2005 as an online crowdsourcing platform that mainly offered tasks such as extrapolating information from images or conducting audio transcriptions (Mason and Suri 2012). However, the usefulness of the platform for online experiments is documented and displayed by several studies (Paolacci, Chandler, and Ipeirotis 2010; Horton, Rand, and Zeckhauser 2011; Mason and Suri 2012). Indeed, conducting experiments on MTurk offers a number of advantages in comparison to laboratory experiments. Before discussing the differences between

online experiments conducted in platforms such as MTurk and laboratory experiments, let me briefly explain how the service works in order to frame the context that these websites offer.

MTurk practically functions as an online labor market for Human Intelligent Tasks (HITs). Users of this platform are categorized as requesters (employers) or as workers (employees). Requesters post HITs on MTurk describing generally the topic of the task, how much it is going to last and the wage employees will get. On the basis of this information, employees select the HITs they are interested to submit to. Both requesters and workers are recognizable by an ID provided by Amazon, but their identities are maintained anonymous. Furthermore, tasks are typically simple and just few minutes are required to complete them (Paolacci, Chandler, and Ipeirotis 2010). All these features define MTurk as a labor market of HITs and are important characteristics to be considered when comparing the platform with offline experimental situations.

Given the structure of MTurk, there are three main practical advantages that makes conducting online experiments in this crowdsourcing platform easier: there is a stable and constant existing pool of subjects, the costs are low due to the nature of the tasks and the faster process of collecting data allows a more effective production of scientific knowledge (Mason and Suri 2012). Additionally, this stable and large low paid pool of subjects differs from the common experimental subject pool (i.e. students) on different levels. Workers on MTurk come from different backgrounds displaying different ethnicities, education levels, languages, nationalities, ages and socio economic status (Mason and Suri 2012). Specifically, the majority of workers are from the United States and India (Paolacci, Chandler, and Ipeirotis 2010), there is a slight majority of women and the median reported age is 32 years old (this data is based on an investigation made on nearly 3000 workers on MTurks by Mason and Suri 2012; the description of the research sample is displayed in chapter 6.1.1). These demographic characteristics do not make the online subject pool representative of the whole population, but increase the external validity of the results by including individuals other than students.

However, despite these advantages, laboratory experiments are still the prevalent tool used for behavioral studies. This is due to many reasons including the necessity to apply a physical treatment and the researcher's worries about the validity of online experiments. Indeed, with regard to internal validity threats there are some limitations often mentioned in relation to online experiments: the non-reliability of participants, the impossibility to create a common knowledge about the experiment and subjects' experience with economic games.

In online experiments, there is no certainty that the subjects are participating on their own or that each subject participates just one time. Although the first problem cannot be solved, multiple participations or the use of programs to compile experiments are rarely a problem in MTurk

because of the possibilities to track IP addresses and to use browser cookies (Mason and Suri 2012). Connected to this problem, there is also the figure of the "spammers": subjects that without paying any attention to HITs instructions try to maximize their gains by doing as many tasks as they can. Such a behavior can be expected to be frequent due to the structure of the online labor market platform. However, as Mason and Suri (2012) and Paolacci, Chandler and Ipeirotis (2010) demonstrated, the amount of workers that consider the platform as a preliminary source of income is negligible. The majority of workers consider MTurk as a fruitful way to spend their free time (Paolacci, Chandler, and Ipeirotis 2010). Indeed, most of them spend a day, or less, working on MTurk gaining less than $20 per week (Paolacci, Chandler, and Ipeirotis 2010). A final option to rule out this problem, lies on the possibility to identify workers and requesters by their MTurk ID and, thus, to filter for participants that display undesired features (Horton, Rand, and Zeckhauser 2011). Thus, findings show that internal validity dangers related to the reliability of participants are not as pronounced as expected and that they can be avoided.

Further issues can be due to the difficulty to supervise subjects and provide them with a common knowledge of the experiment. Indeed, it is demonstrated that unsupervised subjects are less attentive (Oppenheimer, Meyvis, and Davidenko 2009). Hence, the impossibility of creating a common knowledge about the experiment and answer possible inquiries leaves space for individual interpretation that can affect the results (Oppenheimer, Meyvis, and Davidenko 2009). To avoid these situations in online experiments a possibility could be to include comprehension questions and questions controlling individuals' attention called "catch trials". However, because my experiment encompasses a relatively small and simple task, risks connected to incomprehension should be relatively low.

Another important issue is related to the nonnaïvité of MTurk workers (Chandler, Mueller, and Paolacci 2014; Chandler et al. 2015). Indeed, workers remain members of the subject pool much longer than classical members of traditional subject pools in laboratory experiments and therefore are more likely to participate to similar studies (Chandler, Mueller, and Paolacci 2014). Furthermore, the existence of websites where workers can share their experience and information on tasks could influence results obtained on MTurk (Chandler, Mueller, and Paolacci 2014). On the one hand, studies show that information exchanges do not offer a real threat because participants mainly share instrumental features such as length of the task and payments received (Chandler, Mueller, and Paolacci 2014) and are not a frequent phenomenon (Horton, Rand, and Zeckhauser 2011). On the other hand, the nonnaïve workers are particularly relevant for experiments conducting classical and more common used paradigms (Chandler, Mueller, and Paolacci 2014). The main problem of nonnaïve participants is that the effect sizes are reduced and, therefore, the

meaningfulness of the experiment decreases as well (Chandler et al. 2015). Because my design is based on three variations of the dictator game, the workers' nonnaïvité can influence the findings. Thus the experience participants have with MTurk (i.e. the number of HITs they have conducted) and their particular experience with similar economic games will be controlled. However, this is a problem that will be considered in more detail when analyzing the findings.

All these problems are framed in a condition of labor market where workers receive low payments for their participations. However, while the problem related to the nonnaïvité of participants is relevant and should be addressed, studies that compare online and laboratory experiments display similar results; therefore, stressing the validity of the online alternative (Horton, Rand, and Zeckhauser 2011; Mason and Suri 2012; Paolacci, Chandler, and Ipeirotis 2010).

As with every research design, online experiments present some advantages and disadvantages. In my particular case, however, the advantages (most noteworthy the stable and large subject pool as well as the low costs) of conducting the experiment online rather than in the laboratory exceed the disadvantages (mainly the nonnaïvité of respondents). With these considerations in mind, the next section will elucidate the structure of the experiment.

5.4 Experimental Design

This section is dedicated to elucidate the experimental design used for my research. Since my main criticism on previous studies is based on their methodological shortcomings, in the following I will show in detail the structure of the experimental design that – in my opinion – appears to be more suitable to investigate the causal relationship between the representative role and individuals' level of cooperation. Thus, I propose that the causal analysis of the phenomenon under consideration requires a between subjects design where participants are quasi randomly assigned to one of three treatment conditions: (1) interpersonal interaction, (2) intergroup interaction between members of different groups or (3) intergroup interaction between representatives of different groups.

After a description of the method applied to gather the data, the explanation of the game paradigm and of the procedure used to frame an intergroup conflict, this section will finish with an exposition of the experimental procedure.

5.4.1 The Strategy Method

In experimental methods, the standard procedure to obtain data is to conduct experiments where subjects are assigned to different conditions and have to carry out a task depending on the role they have in the game. This method is also called direct response method. However, one problem

connected to this method is that there is the possibility that subjects do not really reflect on their decisions and do not consider the strategic interdependence of the game they are playing (Oxoby and McLeish 2004).

Trying to improve the understanding of subjects' decisions, Selten (1967) developed the strategy method. This method consists in making individuals develop a complete strategy for the game (i.e. make them plan their own behaviors) (Selten 1967). Individuals have to simultaneously decide how they would behave in each possible role and each possible sequential decision in the game. In this way, the development of an entire strategy should foster a thorough reflection on which strategy to employ (Oxoby and McLeish 2004). However, the contrary is also possible; by making individuals reflect about the entire strategy they want to apply, subjects can consider each decision differently than if they would have decided subsequently (Roth 1995). Furthermore, the fact that decisions are made simultaneously in the strategy method can have an effect on individuals' choices (Roth 1995). Indeed, the strategy method does not grasp temporal sequence of decisions in interactions, which can have an effect on individuals' responses (Roth 1995). Thus, to apply either the direct response method or the strategy method on games with a complex structure could have a different influence on the results.

In this particular case, however, I conducted a one-shot dictator game with a simple game structure. Therefore, given the simplicity of this experiment the explained disadvantages of the strategy method should not influence the results. Indeed, several studies comparing the direct response method and the strategy method demonstrated that using one method or the other does not affect the results in sequential dictator game decisions (Cason and Mui 1998) nor in ultimatum games (Oxoby and McLeish 2004), nor even in public good experiments (Fischbacher, Gächter, and Quercia 2012).

A final advantage related to the application of the strategy method is that it allows me to be more efficient in collecting data since each subject provides information about their strategy, not only the subjects assigned to the role of the dictator.

5.4.2 The Dictator Game and the Minimal Group Paradigm

The dictator game is a widely used paradigm in game theory to investigate actors' fairness and cooperation level. As a simple paradigm, the structure of the dictator game is such that strategic behaviors are excluded (Diekmann 2013, 52). Indeed, the game consists in the decision to divide an endowment with another person. To one subject (the dictator) an endowment of – normally – 10 units is given and the subject must consequently decide how much to give to another player that knows the rules of the game but can only passively receive the chosen part of the endowment. The particularity of this game is that a strictly rational actor behaving as a *homo oeconomicus* is

expected to keep everything for him or herself. However, contrary to this standard economic assumption, it has been demonstrated that a significant amount of dictators behave fairly and share money with other players (for a meta-analysis see Engel 2011). The fact that some players act as purely motivated by self-interest, while others display more prosocial behaviors, makes the dictator game a useful tool to investigate how cooperation is established. Indeed, the simple game structure and the interesting findings made the dictator game – in its different variations and forms – one of the most frequently used games of theoretical paradigms (List 2007).

In the research field of intergroup relations, the dictator game is often used to understand behaviors in intergroup contexts (Everett, Faber, and Crockett 2015). These studies on intergroup relations mainly try to display the phenomenon of intergroup bias (Hewstone, Rubin, and Willis 2002) by framing individuals into an intergroup context and making them interact with out-group members. Thus, in games such as the dictator game, players' identities as group members become a relevant feature of the interaction that influences their behaviors. In this variant of the dictator game, the framing procedure is established either by creating a group based on real individuals' characteristics (i.e. nationality, ethnicity, gender, etc.) or by creating minimal groups. Minimal groups are established by categorizing individuals into novel groups (Pinter and Greenwald 2011). Indeed, it has been demonstrated that the mere categorization of individuals in minimal groups is sufficient to create intergroup discriminatory behaviors (Tajfel et al. 1971). Through the years of minimal group paradigm studies, different alternative procedures have been developed. Some procedures use deception to make participants believe that they are categorized in groups that are built on the basis of the similarity of responses to previous tasks, other procedures use imagination techniques to foster individuals' perception of an intergroup context, others just explicitly randomize participants into groups, while others construct groups by making subjects interact and familiarize in a previous task.

On the basis of Pinter and Greenwald's comparison of minimal group induction procedures (2011), as well as the difficulty to develop real games interaction in online experiments and considering the importance to avoid participants' deception, I concluded that the imagination procedure invented by Crisp and Turner (2009) represents a practical method to frame an intergroup context. Indeed, the imagination procedure presents an interesting high degree of minimalism enough to produce in-group favoritism (Pinter and Greenwald 2011). The reason for that is explained by Crisp and Turner (2009, 234) who state that the imagination of intergroup contact activates the same cognitive processes involved in real intergroup contacts and fosters therefore the same discriminatory behaviors as real situations. Although the imagination technique is widely used to investigate the effects that imagined contacts have on individuals' attitudes and behaviors (Crisp

and Turner 2009; Turner and Crisp 2010; Turner, Crisp, and Lambert 2007), Pinter and Greenwald (2011) display its usefulness as a procedure to establish minimal groups.

Thus, in this experiment the intergroup contextual framework is based on this imagination procedure. In the two intergroup conditions, before the actual game, I show two different paintings and make participants choose the one they prefer. Participants are instructed to imagine that half of the participants have been categorized in a "red group" and the other half is categorized in a "green group" based on their predilection of one of the two paintings. They are further told to imagine being part of one of two groups that preferred the same painting (Figure 2 displays the framing procedure as it was in the experiment).

As figure 2 illustrates, the slide that frames participants into different groups does not actually present the possibility to choose the painting one likes the most. This level of passiveness can lead participants to skip to the following slide without carefully reading the instructions. If this was the case, this behavior could compromise the assumed effect of the framing mechanism. To avoid that, I decided to hide the "Next" button during the first five seconds of the screening time. In this limited amount of time participants must remain on the page, which should consequently guarantee their exposure to the intergroup treatment.

Paul Klee, Park near Lu (1938) Vasilij Vasil'evič Kandinskij, Swinging (1925)

Look at the two paintings and decide which one you like the most. Imagine that participants of the study will be divided into two groups, a red group or a green group, depending on the choice they made. Now, imagine you have been assigned to the group which likes the same painting as you.

A button allowing you to continue the experiment will appear in 5 seconds.

Next

Figure 2: Minimal group induction procedure used in the experiment

5.4.3 Procedure

The experiment was uploaded as an HIT on Mturk on Tuesday, April 9th 2019. With a single session where the HIT was accessible for a period of an hour and forty minutes, a total of 194 participants were recruited. As table 1 shows, on the description page of the experiment on MTurk, participants were informed about the general structure of the HIT (type of task, time necessary, anonymity) and that they were going to be paid $0.50 as show-up fee with the possibility of earning $1.50 as a bonus payment (as dictators they were endowed with 10 points, each point worth $0.15). For workers that actively participated in the whole experiment (a dictator game and a survey) without timing out any pages (N = 159), the average earning amounts to $1.24.

Table 1: HIT Description on MTurk

Purpose of the study	To understand how people make decisions in particular situations.
What you will do	You will complete decision-making tasks and answer survey questions.
Time required	Approx. 5-10 minutes.
Risks	There are no anticipated risks and your participation will remain anonymous.
Compensation	You will receive $0.50 for participating and up to $1.50 as a bonus for completing the HIT. In case of trouble such as technical difficulties, search for a HIT called ETH DeSciL Trouble Ticket.

Since the management of the experiment as an MTurk HIT was entrusted to the Decision Science Laboratory (DeSciL) of the Swiss Federal Institute of Technology in Zurich, the uploading of it was conducted through their employer profile on the platform. Indeed, the experiment was compliant with their operational rules and their terms and conditions[3]. Thus, following the DeSciL procedure, participation to the HIT was limited only to US citizens.

Once workers accept to participate to the HIT, they were directed towards the starting page of the experiment, where they have to accept the general conditions before starting the game (the general conditions can be found in the 'Informed Consent Form' page in appendix 10.1). Once the general conditions are accepted, participants are assigned to one of the three treatment conditions using a procedure that is not entirely random. The procedure consists in grouping participants in

[3] https://www.descil.ethz.ch/lab/researchers

groups of four on the basis of their arrival order and then assign these four participants to one of the conditions following the cyclical order: interpersonal, intergroup and intergroup between representative interaction. This allows both to have enough participants in all conditions and to avoid that the interdependency between participants creates coordination problems (i.e. too long time gaps). Subchapter 5.1.2 of the results will deal with the randomization procedure and discuss its validity. After the treatment assignment, participants start the actual dictator game.

5.4.4 The Game

The game consists in a one-shot dictator game that subjects have to submit either as individuals, as group members or as the representative of an in-group member. In order to collect data efficiently, the strategy method is applied, making each participant enact the role of the dictator. Each of the subjects' decision can affect their payoff and that of the other participants they are interacting with. However, the players' actual payoff is determined by randomly selecting their decision or that of one of the players interacting with them. Thus, prior to playing the game, participants were made aware that their allocation choice *could* be selected to determine their own and the other players' payoff. Finally, the dictator game differed in some features depending upon the specific condition, which will be outlined below.

In the *interpersonal condition*, subjects are told they have to play a dictator game with another participant of the survey. In this condition, dictators are given 10 points as endowment that they have to allocate between themselves and the other subject, and can be made by means of selecting one of the possible options provided (10-0, 9-1, 8-2, 7-3, 6-4, 5-5, 4-6, 3-7, 2-8, 1-9, 0-10; see Appendix 10.1.1). The presentation of these options aimed at avoiding uncertainties over the payoffs.

Differently from the interpersonal condition, in the *intergroup condition* between group members, subjects are framed into minimal groups using the imagination procedure previously explained and they are told that they are going to play a dictator game with a member of the other group – making situational intergroup characteristics salient.

In the *intergroup condition between representatives*, additionally to the contextual framing of the intergroup situation, participants are also responsible for the outcome of an in-group member. Players in the dictator game are paired with another member of their in-group. So participants are not only choosing for themselves, but their decision will also influence the payoff of a member of their group. Thus, participants' choices consist on how much of the endowment they want to give to the other group and how much they want to keep for their own group. Prior to the game, participants will be informed that the amount of money they decide to keep for the group will affect both their payoff and the payoff of the in-group member they are representing and it will be divided

equally within the group. Furthermore, because the amount of the endowment is divided between the two members of both the in-group and the out-group, the allocation choice presented to participants in this condition will range from 0 to 20 with an increase of 2 points in order to avoid having decimal numbers in the division of money within the group (allocation options: 20-0, 18-2, 16-4, 14-6, 12-8, 10-10, 8-12, 6-14, 4-16, 2-18, 0-20; see Appendix 10.1.3). Therefore, the possible distribution options differ from the other two conditions, but because the amount of points is divided within the group, the individual payoff remains the same.

The three situational conditions will allow the discerning of the real effect of representation from that of the construction of an intergroup context. Indeed, the comparison between the intergroup situation between representatives and the intergroup situation between members of different groups will illustrate the authentic effect that representation has on individuals' cooperative behaviors and the legitimation of it.

5.4.5 The Survey

After the game, the experiment closes with a final questionnaire where classic demographic variables such as education level, income, gender, age, and employment status, as well as further confounders useful to control the possible problems of MTurk, such as participants' previous experience with economic games and their memory in participating in similar experiments, will be collected. Furthermore, in the representative condition, an additional question will be asked, which is intended to discern between implicit justification and accountability mechanisms. In this question, participants were asked to imagine interacting with their group mate and choosing how much to cooperate with them. Answers to this question will allow to establish which mechanism is responsible for the allocation in the intergroup context (whether the accountability or the implicit justification). To check for the validity and the success of the intergroup framing procedure and of the assignment of the representative role, two further questions aimed at measuring participants' feeling of belonging to their group (both in the intergroup and in the intergroup conditions between representatives) and their feeling to represent an in-group member (only in the intergroup condition between representatives) will be added.

5.5 Hypotheses and Operationalization of Variables

The following section will illustrate the fundamental variables used to investigate the causal relationships assumed by the developed hypotheses (table 2 provides a summary of the hypotheses).

In other words, this chapter will display how the variables collected both during the game and in the questionnaire have been operationalized and measured.

Table 2: Summary of the hypotheses

Hypothesis 1	In situations of intergroup relations conducted by two members of different groups, subjects are less cooperative towards out-group members than in situations of interpersonal relations.
Hypothesis 2	In situations of intergroup relations conducted by representatives, subjects are less cooperative towards out-group members than in situations of intergroup relations conducted by two members of different groups.
Hypothesis 3	Representatives feel accountable for their in-group members and therefore will be cooperative.
Hypothesis 4	The representative role implicitly allows the justification of the pursuit of their selfish interests; therefore, they will be less cooperative with their in-group members.

Treatments. As already explained, the experiment was built in order to discern between in-group favoritism effect and effects related to the representative role. In order to accomplish such goal, three experimental treatment conditions were created. These conditions, however, are the results of the two effects: an interpersonal/intergroup treatment and a representative/non-representative treatment. When assuming an in-group favoritism effect, the first hypothesis deals with the first treatment; namely, the comparison of interpersonal and intergroup situations. Nevertheless, on the basis of the criticisms highlighted in this paper, in order to investigate the real effect of being a representative, the second hypothesis considers the second treatment; hence, it evaluates the comparison of the intergroup interaction between members of different groups with the intergroup interaction between representatives.

Validity Checks. In order to check whether the treatments worked as intended, two treatment validity checks were also conducted; namely, two Likert scales were implemented in the questionnaire. The intergroup treatment – both the intergroup condition and the intergroup condition between representatives – was controlled by constructing a five-points Likert scale that ranges from 'Strongly Disagree' to 'Strongly Agree' and gathers data on the participants' imagined feeling of belonging to a group. Furthermore, the validity check for the representative treatment was constructed using the same five-points Likert scale, but it measured the participants' feelings in regards to their ability to influence their group mate's payoff. This question was only asked to participants in the representative condition.

Cooperation. The dependent variable is the individual's cooperation level measured in the experiment through the allocations of points to themselves or to their group, which was made by participants in the dictator game in the three experimental conditions. Thus, the more points individuals allocate to themselves or their own group, the less they are considered to be cooperative. The cooperation variable is, therefore, operationalized as a quasi-metrical variable based on participants' distribution choices.

Since in the intergroup condition between representatives the allocation options in the dictator game ranges from 0 to 20 (because the points are divided between the representative and the represented in-group member), for the analysis of the results the amount of points participants decided to keep for their group is halved in order to be able to consider the individual amount of points each group member received. This is done in order to compare the allocation distribution between the three conditions.

Representation mechanisms. Manipulating experimentally the two theoretical mechanisms would have required more temporal and monetary resources; moreover, because I aimed at a simple game structure, I opted to collect data on the two mechanisms through self-reported data. Other possibilities could have been to add a treatment where participants could choose how to distribute the payoff within their pair or to add a subsequent part in the experiment where individuals could choose how to allocate the money they kept within their pair. However, because the implementation of further treatments would have been too expensive and because I wanted to avoid the deception of participants, I decided to collect information about the two mechanisms through a question at the end of the dictator game. Nevertheless, I am aware of problems related to self-reported data such as social desirability bias or other unintentional biases and that actual behaviors and self-reported data can differ.

I asked individuals in the representative condition how many points they would have kept for themselves if they had had the possibility to choose how to divide the points they decided to keep for their pair between themselves and their in-group member. Hypothesis 3 assumes that, because representatives are accountable for their in-group member, they will cooperate and decide for a fair distribution of money within the group. On the contrary, hypothesis 4 expects that the representative role justifies the pursuit of self-interests and, therefore, representatives do not really care about the opinions of their in-group member and will not cooperate with him or her. Thus, I expect that participants' assertions of a fair distribution of money within the group will support the accountability mechanism whereas non-cooperative distribution statements will support the implicit justification explanation. This hypothetical allocation within the pair is considered theoretically as a metrical variable that ranges from 0 to 20 points. However, participants' decision is limited to their

previous choice in the dictator game: the amount of money they can keep for themselves ranges from 0 to the amount of points they kept in the dictator game. Thus, the variable is further operationalized as the percentage of points kept in the dictator game, which they would have kept for themselves within their couple.

Demographic variables. As classical control variable I collected data on participants' gender, education level, age, income, employment status and I asked them whether English was their native language. Variables on participants' gender and native language are operationalized as dummy variables, the education level is coded as an ordinal variable based on the education system in the United States, the employment status is categorized as a nominal variable where multiple choices are possible, while age and income are continuous variables and income is considered as the total annual household income before taxes (see Appendix 10.1). These variables are collected both to control the composition of the sample and to verify the effectiveness of the randomization process.

Nonnaïvité. To address one of the main drawbacks of MTurk, I also controlled the nonnaïvité of participants by asking them (1) about their experience on MTurk and (2) about their particular experience of similar experiments. Participants' general experience on MTurk is operationalized as metrical variable that measures the number of scientific studies (surveys and experiments) they attended to, while their exposure to a similar money distribution task, such as the dictator game, was measured with a yes or no question, constructing a dichotomous variable.

Timeouts. It is well known that subjects in online experiments are not participating while being in a neutral environment such as the laboratory, but they are at home or in places where they are exposed to distractions. Hence, because of the interdependencies created through the use of the strategy method and because conducting real interaction online entails the physical presence of different participants in front of the computer screen, I had to create a variable that avoided participants to get blocked in the experiment in order to wait for other participants to make their own decisions. Indeed, all the screens relative to the dictator game – from the instructions to the actual allocation decision – display a timer indicating the time participants have to read and if necessary fill out the page. The timer is set to 90 seconds and once it reaches the limit, the screen page submits itself continuing the experiment. The screen pages with the timer are the general introduction, the instructions, the intergroup framing procedure page and the page where participants have to allocate the points they receive (see appendix 10.1). For all these pages, I created a timeout variable that indicates whether the page is submitted because the time available runs out or not. To avoid that participants take advantage of the timer and let the experiment run itself to get money without doing anything, I decided not to inform them about the presence of a

time limit for the dictator game. Finally, if the allocation page timeouts, the allocation choice is set at the equal distribution of points. This is done in order to give an opportunity to participants paired with subjects that timeout the allocation page to get some money. Indeed, allocations set by timeouts will still be part of the randomization process that determines participants' payoff.

To sum up, these timeouts variables have two functions: they avoid losing information of participants dependent on other distracted subjects and they give the opportunity during the analysis to rule out participants that did not see the introduction, the instructions, the framing screen or participants that timeout during the choice and, therefore, did not choose how to allocate the points in the dictator game.

6 Results

This chapter is divided into two main parts: the first section will describe the sample, discuss the randomization procedure and analyze the validity of the treatments; whereas the second section will address the statistical analysis and consider each hypothesis individually.

6.1 Descriptive Statistics

6.1.1 MTurk Sample

The sample consists of 194 subjects that accepted the general conditions of the experiment and did not decide to withdraw at a certain point. From this initial sample, all the participants who made the timer run out in one of the pages were excluded, consequently reducing the sample to 165 observations. This conservative exclusion was aimed at avoiding any kind of possible error. Indeed, although in some cases participants made only the introductory or informatory pages expire and had actively allocate the money, it still subsisted the danger that they did not understand the rule of the game or that they were not exposed to the treatment. Furthermore, participants that left the experiment after the completion of the dictator game without completing the subsequent survey were also excluded, subsequently slightly decreasing the final sample once again (N = 159).

The final sample consists of 38% females and 89% English native speakers. Of the participants, 63% were already experienced with similar games; the median of the number of participation in scientific studies on MTurk is 1000 with the first quartile at 95 and the third at 6250 (only 9 subjects never had previous experience with Mturk, while the subject who participated to most studies attended 100'000 HITs). The median age of participants is 33 with the first quartile at 29 and the third one at 40. In respect to the education level, 12% asserted that their highest education attainment was a high school diploma, 23% indicated that they attended a college without a degree, 17% have an associate's degree, 42% have a Bachelor degree and 6% have a graduate degree (Master or Ph.D.). In the sample, 25% of the participants have an annual household income between $50'000 and 74'999 and the median of participants' annual household income lies between $40'000 and 49'999 with the first quartile between $20'000 and 29'999 and the third quartile that lies between $50'000 and 74'999. Finally, 68% of the respondents claimed to be full-time employees working 30 hours or more a week, 13% were self-employed and the remaining 19% is shared between the other categories (6% part-time employee, 2% students, 4% were out of work, 4% homemakers, 3% were retired or permanently disabled)[4].

[4] Note that the overlapping of categories is possible.

This description of the sample already provides some interesting information. Indeed, the amount of participants working as full-time employees or are self-employed and the structure of the variable annual household income confirms the expectations that MTurk is not the participants' primary source of income. In the next section, the success of the randomization process of the experimental treatment will be elucidated and discussed.

6.1.2 Experimental Randomization

As explained in section 4.4.3, in order to have enough participants for each condition (interpersonal, intergroup and intergroup between representatives) and because of the interdependencies between the participants to the experiment, participants were assigned to the treatment conditions in groups of four. Once four participants accepted the general conditions of the experiment, they were assigned to a treatment: the first group of four participants was assigned to the interpersonal condition, the second group to the intergroup condition and the third group to the intergroup condition between representatives, the forth again was in the interpersonal condition and so on. This assignment method was favored instead of the complete randomization in order to reach a balanced participation in all the three conditions. Indeed, table 3 displays the equal distribution of participants between the three treatment conditions.

Table 3: Participants' distribution between treatment conditions

Interpersonal	Intergroup	Intergroup between representatives	Total
54	51	54	159

To control the effectiveness of the applied randomization method, an analysis of the relationship between the treatment conditions and the variables collected in the post-experimental survey was conducted. Since a perfect randomization procedure should be reflected in a randomized distribution of subjects into the experimental conditions, it was expected that the collected control variables should not depend from the treatment conditions. In line with these expectations, I found no significant relations between the treatment conditions and the collected variables (appendix 10.2 provides supplementary information about the analysis). As table 4 displays, the only exception regards participants' distribution in the treatments on the basis of their gender. Indeed, a pairwise comparison between the treatment conditions shows a significant higher amount of female subjects in the interpersonal condition in comparison to the intergroup (two-sided Fisher exact test, $p < 0.01$) and a slightly significant higher amount of women in the interpersonal condition in comparison to the intergroup condition between representatives (two-sided Fisher exact test, $p = 0.052$).

Table 4: Participants' distribution between the treatments on the basis of their gender

	Interpersonal	Intergroup	Representatives
Female	29	13	18
Male	25	38	36

This overrepresentation of female participants in the interpersonal condition cannot be explained neither by the treatment assignment, nor by a gender specific bias related to subjects' booking time of the HIT. First, there is no specific reason why female participants should have started the experiment following a specific arrival order pattern in order to mainly fall into one condition. Second, the analysis of variance conducted does not show any relation between individuals' arrival time to the experiment (i.e. the time ranking in the experiment of the four-participants group) and their gender (Eta squared of 0.0029). Although the relationship between gender and treatment will be considered in the following statistical analysis, it can be attributed to a fortuitous case.

Finally, to further check the validity of the randomization process, we controlled the relation between the treatment conditions and participants' arrival time. The Eta squared value of 0.0028 confirms that individuals' arrival time is not related to their assignment to the treatment. Therefore, the assignment of the treatment conditions worked as expected.

6.1.3 Treatment Validity Checks

Before starting the statistical analysis of the collected data, it is worth looking at the effectiveness of the treatments. Indeed, as a measure of controlling the success of the two treatments, we constructed two validity checks in the form of Likert scales in the survey. These scales are aimed at understanding (1) whether participants felt they belonged to the group they placed – both the intergroup and intergroup condition between representatives – and (2) whether participants in the intergroup condition between representatives felt they were influencing their group mate's payoff. Since the two treatments mainly aimed at influencing the context in which individuals behave, the effects of the treatments were dependent on participants' interpretations of the different experimental situations. Thus, in order to understand whether the different experimental situations were actually experienced differently – i.e. whether the treatments successfully influenced individuals' perception of the situation – the two Likert scales investigate aspects that are strictly connected to individuals' interpretation and feeling in regards to the situations they underwent.

As displayed in chapter 4.4.2, the intergroup context was established using the imagination procedure to create minimal groups. The data from the Likert scale testing the effectiveness of the intergroup treatment demonstrates that the treatment was not very successful (figure 3 shows the distribution of answers to the Likert scale). Indeed, 44 out of 105 participants (42%) under the intergroup treatment – in the intergroup or the intergroup condition between representatives – did not agree that they felt to belong to the group they were part of, 24 out of 105 participants (23%) remained neutral, while 37 out of 105 subjects (35%) gave a positive answer. As figure 3 shows, the high variance of answers in the negative side of the scale and the small amount of participants that strongly agree with the scale statement indicates that the construction of an intergroup context may have not worked as expected – at least for the majority of the respondents.

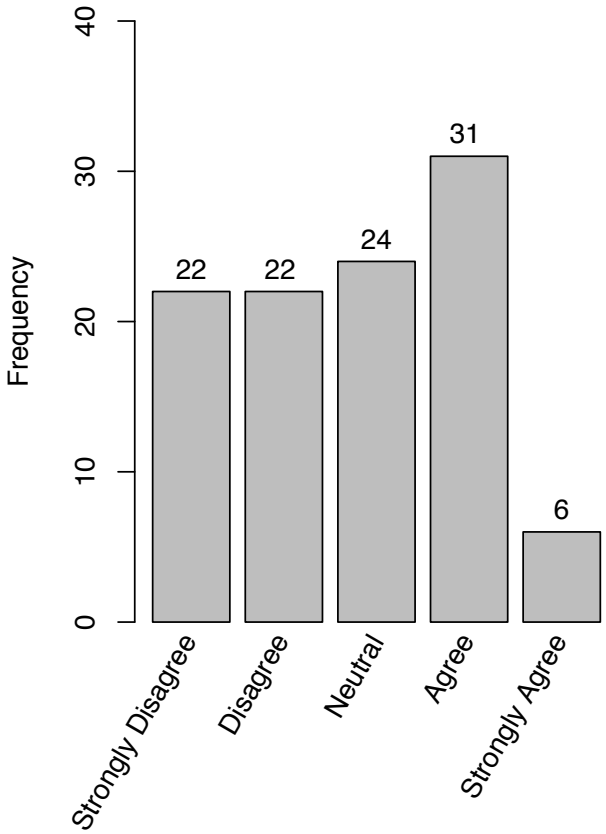


Figure 3. Distribution of the level of agreement about the feeling of belonging to the group (N=105).

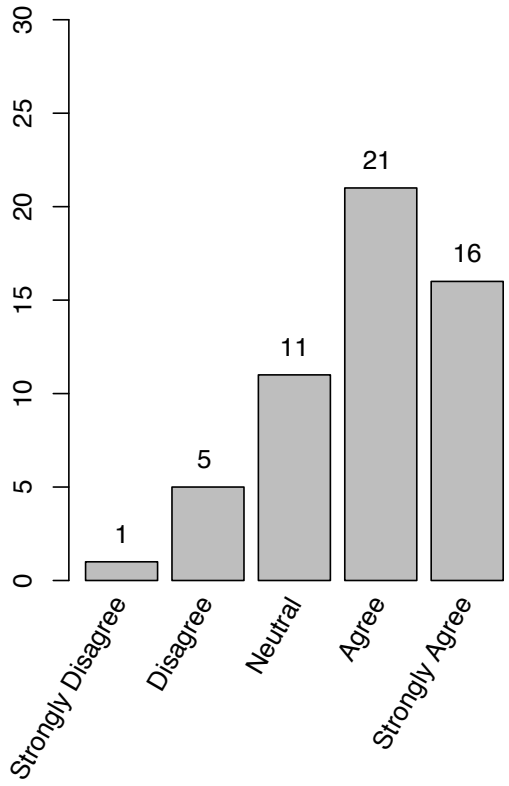


Figure 4. Distribution of the level of agreement about the feeling of influencing the group mate's payoff (N=54).

On the contrary, the representative treatment appeared to be effective. Figure 4 shows a much more positively skewed distribution of answers to the Likert scale on participants' feeling to influence the group mate's payoff. Indeed, of the respondents in the intergroup condition between representatives, 21 out of 54 (39%) agreed and 16 out of 54 (30%) strongly agreed that they felt to

be influencing their group mate's payoff. On the negative side of the scale, a total of 6 respondents out of 54 (11%) did not feel that they influenced their group mate's payoff, while 11 subjects out of 54 (20%) gave a neutral answer. Since the majority of participants felt responsible for their in-group mate, the representative treatment succeeded in establishing a feeling of representativeness in participants.

Since the representative treatment seemed to be a more successful treatment than the establishment of an intergroup context and since the representative role is intrinsically related to the presence of intergroup relations, we compared participants' feeling of belonging to the group in the intergroup condition between group members and in the intergroup condition between representatives (Table 5 illustrates the comparison). The distribution of answers between the two conditions appears to be similar. This is also confirmed by the result of a two-sided Fisher exact test ($p = 0.80$) that does not display any significant difference on individuals' feeling of belonging to their group between the two conditions. Hence, the perception of an intergroup context seems to not be influenced by the assignment of the representative role and its consequent feeling of responsibility towards an in-group member.

Table 5: Agreement level of the feeling of belonging to the group (a comparison between two conditions)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
Intergroup	10	11	14	14	2	51
Representatives	12	11	10	17	4	54

Since the understanding of the success of a treatment implementation is fundamental for every kind of experimental analysis, the findings presented in this section will be useful to understand the next section. By presenting the experimental findings, the following chapter will be focused on causally disentangling the representative role and in-group favoritism effects of individuals' cooperation level.

6.2 Statistical Analysis

6.2.1 The In-group Favoritism Effect

The analysis of the in-group favoritism effect is conducted by comparing the amount of endowment participants decided to keep for themselves in the experiment in the interpersonal and the intergroup condition. Figure 5 displays the comparison of the distribution of points 'allocated to self' in both

conditions. As expected, participants in the intergroup conditions display less cooperative behaviors than participants in the interpersonal condition. This is mostly visible when looking at the comparison between individuals' choices to equally divide the endowment and those of subjects' choosing to keep everything for themselves. Indeed, the percentage of participants equally dividing the endowment drops from 50% (in the interpersonal condition) to 35% (in the intergroup condition), while the percentage of people behaving in a thoroughly self-interested manner rises from 35% (in the interpersonal condition) to 47% (in the intergroup condition). Indeed, if the average points of the 'allocation to self' are compared, in the interpersonal condition the average points participants decided to keep amounts to 7, while in the intergroup condition the average slightly increases to 7.5.

Despite the results showing a decrease in cooperation (i.e. an increase in discrimination), the comparison between the amount of endowment participants decided to keep for themselves in the experiment in the interpersonal and the intergroup condition does not show a significant difference (Wilcoxon rank-sum test, $p = 0.22$). Thus, the results found in relation to the in-group favoritism effect do not support our hypothesis.

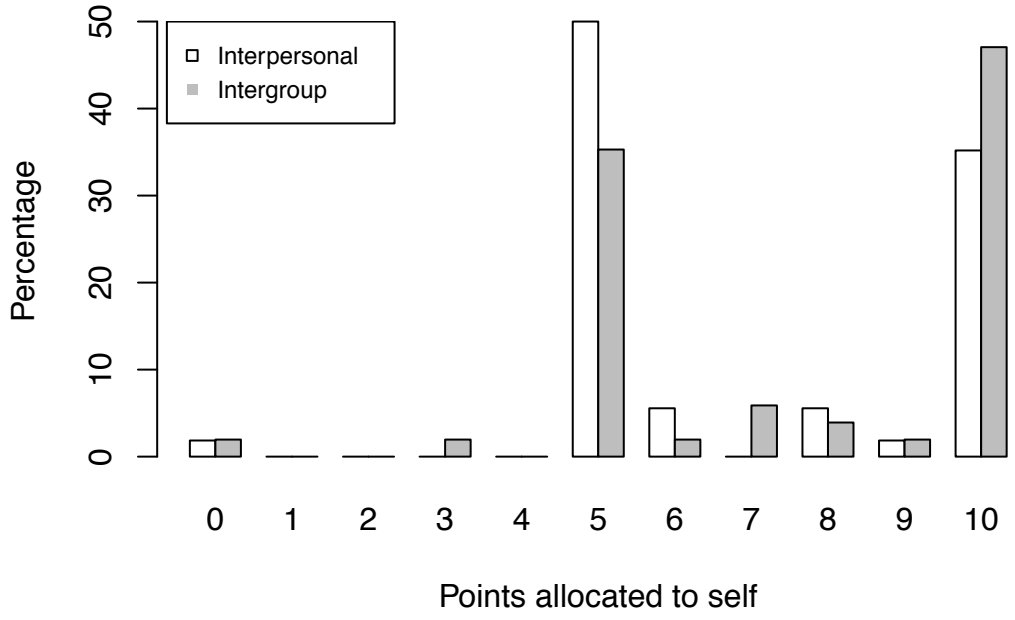


Figure 5. Distribution of allocation to self: a comparison between the interpersonal and the intergroup condition.

To sum up, although the results show a slight decrease in cooperation in the intergroup condition in comparison to the interpersonal condition, the findings collected do not support the existence of an in-group favoritism effect for groups constructed following the imagination procedure applied in

the experiment. Thus, the intergroup context created in the experiment did not significantly decrease individuals' cooperation level and discrimination.

6.2.2 The Representative Role

The comparison of the distribution of allocated points in the intergroup and the intergroup condition between representatives shows that there is a small decrease in cooperation between the two conditions[5]. Figure 6 displays that the percentage of people that shared the endowment equally with out-group members is of just 9% lower (from 35% in the intergroup condition to 26% in the intergroup condition between representative) and the percentage of participants keeping the whole endowment for themselves, their group respectively, increases from 47% to 50% between the conditions. In comparison to the intergroup condition, the representative treatment increases the average of points allocated to self or each group member from 7.5 to 8.

Similarly to the previous comparison, the small decrease of cooperation does not show a significant difference in the allocation distribution between the intergroup and the intergroup condition between representative (Wilcoxon rank-sum test, $p = 0.54$). This indicates that the results do not support the hypothesis that enacting the representative role decreases individuals' cooperation with out-group members.

[5] It should be noted that participants playing the dicator game in the intergroup condition between representatives decided the allocation of points for their group. The amount of points were then divided equally within the two members of the group. Hence, for the sake of comparison, in the analysis, the distribution of allocated points in the intergroup conditions between representatives is considered as the points received by each individual member of the group rather than the overall group score.

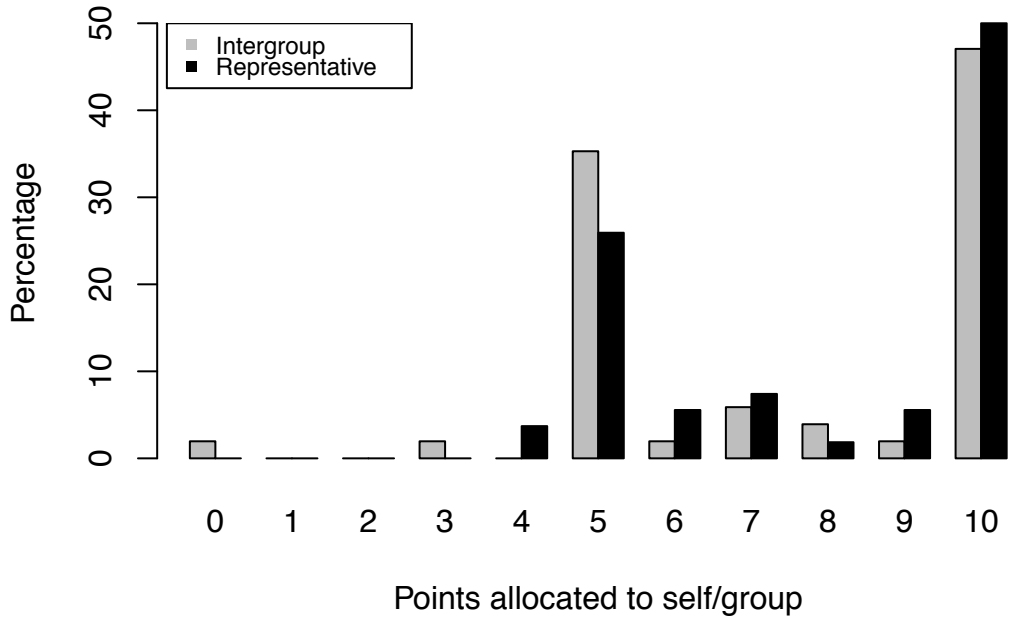


Figure 6. Distribution of allocation to self/each group member: a comparison between the intergroup and the intergroup condition between representatives (for comparability, the points represented in the figure for the intergroup condition between representatives do not represent the group allocation, but they are considered as the points each member of the group receives).

A supplementary analysis aimed at testing hypotheses 1 and 2 was conducted filtering for participants that did not feel to belong to the group they were assigned to, keeping only subjects that were neutral, that agreed or that strongly agreed to belong to the group (N = 115). The aim was to increase the validity of the intergroup interaction treatment and to analyze more reliable results. The additional analysis, however, did not display any significant differences from the results presented (see Appendix 9.3 for the detailed results).

6.2.3 A Comparison Between the Three Conditions

Since neither the intergroup treatment, nor the representative treatment seem to significantly influence participants' cooperation level, looking at the effect of the interaction of the two treatments can provide more insights into the phenomenon. The interaction of the two treatments is analyzed by comparing the intergroup condition between representatives with the interpersonal condition. This is the approach used in previous studies to investigate the effect of the representative role (Diekmann 1997; Song, Cadsby, and Morris 2004; Humphrey and Renner 2011; Hauge and Røgeberg 2014). However, as explained previously, this comparison does not disentangle the effect of the representative role from the in-group favoritism effect.

The comparison of the distributions of allocated points to self or to each group member between the interpersonal and the intergroup condition between representatives reveals a significant

difference between the distributions (Wilcoxon rank-sum test, p = 0.05). Thus, being a representative of a group mate and interacting in an intergroup context with out-group members significantly decreases individuals' level of cooperation. This is also visible in the comparison of the distribution of the allocated points to self or to each group member in all the experimental conditions displayed in figure 7. Indeed, figure 7 shows that the distribution of allocated points to each group member in the intergroup condition between representatives is further shifted towards less cooperative allocations in comparison to the distribution of points to self in the interpersonal and the intergroup conditions.

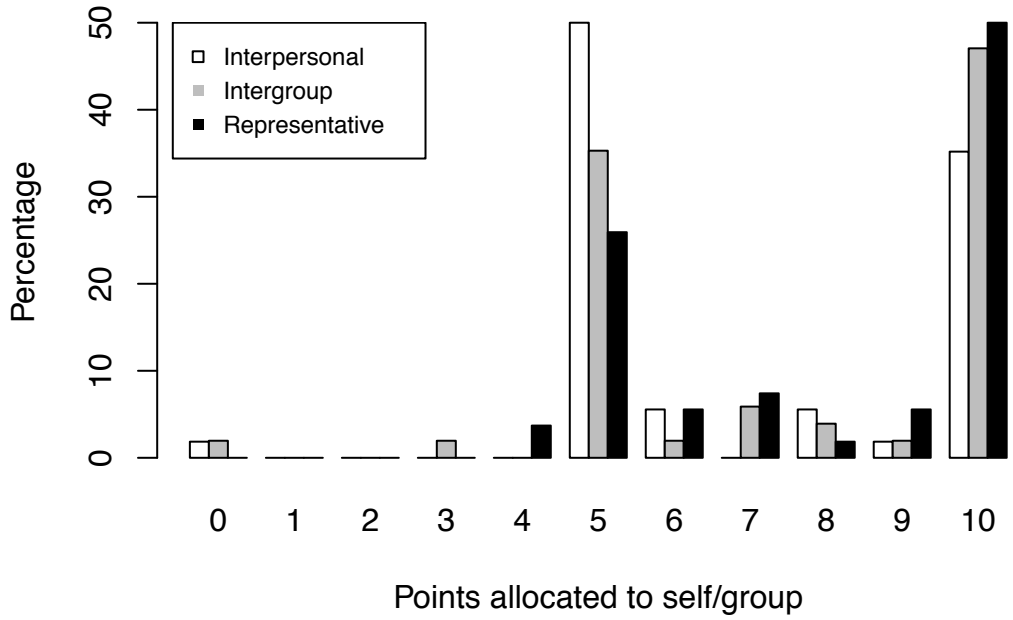


Figure 7. Distribution of allocation to self/each group member: a comparison between the three conditions (for comparability, the points represented in the figure for the intergroup condition between representatives do not represent the group allocation, but they are considered as the points each member of the group receives).

A further comparison can be made by looking at the difference between the average and median points allocated to self or to each group member in the three conditions (see figure 8). While the mean points participants' decided to allocate to self or to each group member slightly increases between conditions, the median – as a less sensible measure to extreme values – describes a different picture. Indeed, where in the interpersonal condition 50% of participants decided to keep half of the endowment for themselves, in the intergroup condition the median increases to eight points allocated to self, while in the intergroup condition between representative half of the participants kept the whole endowment for the group (group members median points = 9.5).

Although the developed hypotheses are not supported by the data, the significant decreases in cooperation in the intergroup condition between representatives in comparison to the interpersonal condition displayed by the Wilcoxon test is also visible in the strong increase of the median allocation to self or each group member.

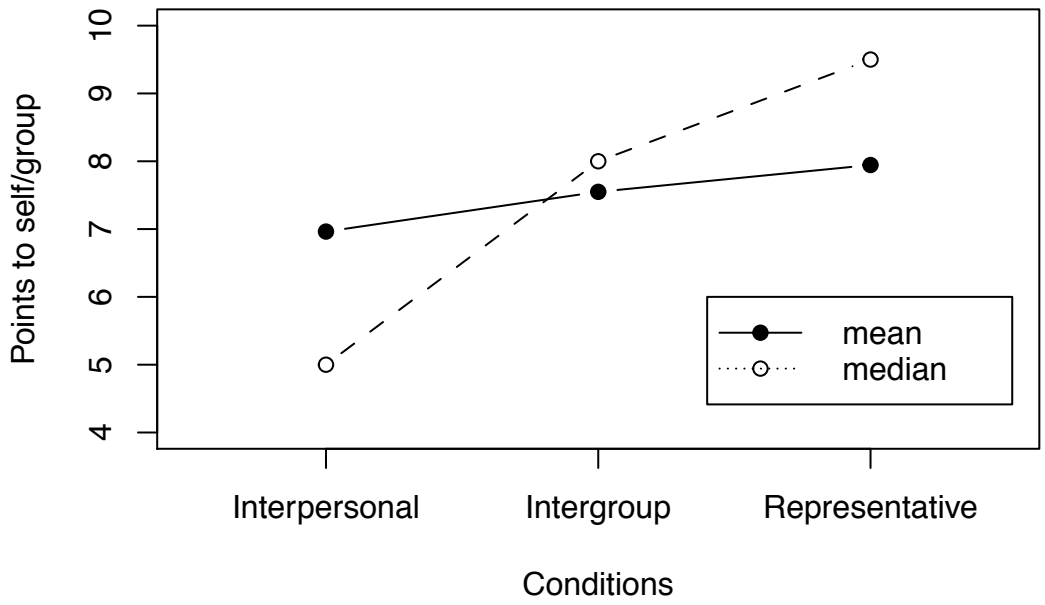


Figure 8. Mean and median comparison between treatment conditions (for comparability, the mean and median points represented in the figure for the intergroup condition between representatives do not represent the mean or median group allocation, but they are considered as the median or mean points each member of the group receives).

To control the robustness of the findings, an additional analysis of the results was conducted through the comparison of different models explaining participants' cooperative level. Since the quasi-metric variable used in the previous analysis based on the points allocated to the self or to each member of the group in the dictator game is characterized by a bimodal distribution, I decided to recode the variable into a dichotomous variable. Splitting participants using the median, individuals were categorized into 'more cooperative' and 'less cooperative'. Three different logistic models were then compared to check how robust the interaction between the representative role and the in-group favoritism effect was (see table 6). As the three models display, the causal relation between the interaction effects and the dichotomized individuals' cooperative behaviors is consistent, also when controlling the collected confounders.

Model 1 displays the correlation between the treatment conditions and participants' cooperation. The model shows that only the effect of the interaction between the construction of an intergroup context and being responsible is significantly related to being less cooperative. Indeed, it

can be seen that individuals in the intergroup between representatives condition are more likely to allocate more to themselves and their group mate in comparison to participants' allocation to the self in the interpersonal condition.

Since the gender variable is in part related to the randomization process, in model 2 the relationship between the treatment conditions and the dependent variable is controlled in participants' gender. As table 6 shows, gender does not have an effect on participants' cooperation level. Furthermore, the interaction of both an intergroup interaction and the representative role still significantly affects the likelihood of being less cooperative. Thus, the participants' gender does not affect the influence that the intergroup between representatives condition has on individuals' cooperation level in comparison to the interpersonal condition.

Finally, model 3 controls all the confounders collected in the post-experimental survey as well as the participants' arrival time to the treatment assignment (i.e. the order of the four-participants groups assigned to the treatments). The model displays that in addition to the interaction effect that still remained significant, also previous similar experiences with economic games had a highly significant effect on participants' cooperation level. Indeed, participants with similar experience are more likely to be less cooperative than participants without any previous experience.

Ultimately, the findings can be considered to be robust also when controlling for the control variable collected in the survey. Thus, this final comparison displays the validity of the causal interaction effect found in the experiment, but not the causal effect of each mechanism alone.

Table 6: Logistic Regression explaining participants' cooperation level in the dictator game

	Cooperation level (Reference: more cooperative)		
	Model 1	Model 2	Model 3
Constant	-0.53 ˚	-0.67 *	-2.88 ˚
	(0.28)	(0.33)	(1.54)
Representative	0.72 ˚	0.66 ˚	0.91 *
(Reference: Interpersonal)	(0.39)	(0.40)	(0.46)
Intergroup	0.49	0.41	0.48
(Reference: Interpersonal)	(0.40)	(0.41)	(0.46)
Gender	-	0.29	0.16
(Dummy, male=1)		(0.35)	(0.40)
Age	-	-	-0.00
			(0.02)
Income	-	-	0.12
			(0.09)
Education: College, no degree	-	-	0.78
(Reference: high school diploma)			(0.70)
Education: Associate's degree	-	-	0.05
(Reference: high school diploma)			(0.72)
Education: Bachelor's degree	-	-	0.62
(Reference: high school diploma)			(0.63)
Education: Graduate's degree (MA, Ph.D.)	-	-	1.02
(Reference: high school diploma)			(0.94)
MTurk Experience	-	-	0.00
			(0.00)
Similar Experience	-	-	1.17 **
(Dummy, yes=1)			(0.40)
Arrival time	-	-	-0.02
			(0.01)
Observations	158	158	158
AIC	220.87	222.18	230.15
BIC	230.06	234.43	291.40
Log Likelihood	-107.44	-107.09	-95.08
Deviance	214.87	214.18	190.15

Note: Standard errors are in parentheses. In the table employment status dummies are omitted.
˚ p<0.1; *p<0.05; **p<0.1; ***p<0.001.

6.2.4 Accountability vs. Implicit Justification

Although the effect of being a representative alone does not display any significant results, the fact that the interaction between the effect of the representative role and the in-group favoritism effect has an influence on individuals' cooperation level makes the analysis of the mechanism at the basis of representation relevant. In order to fully understand the interaction effect, the mechanisms behind each interaction term should be clearly addressed. In this section, therefore, the two competing hypotheses derived from the theoretically assumed mechanisms of accountability and implicit

justification will be tested against each other. To test these assumptions, the data used regarding the intergroup allocated points are based on self-reported information collected in the post-experimental survey. As figure 9 demonstrates, the results mostly support the accountability mechanism. Indeed, 54% of participants in the intergroup condition between representatives assert that they would have equally divided the points with their group mate. Thus, representatives seem to care about the payoff of their group mate.

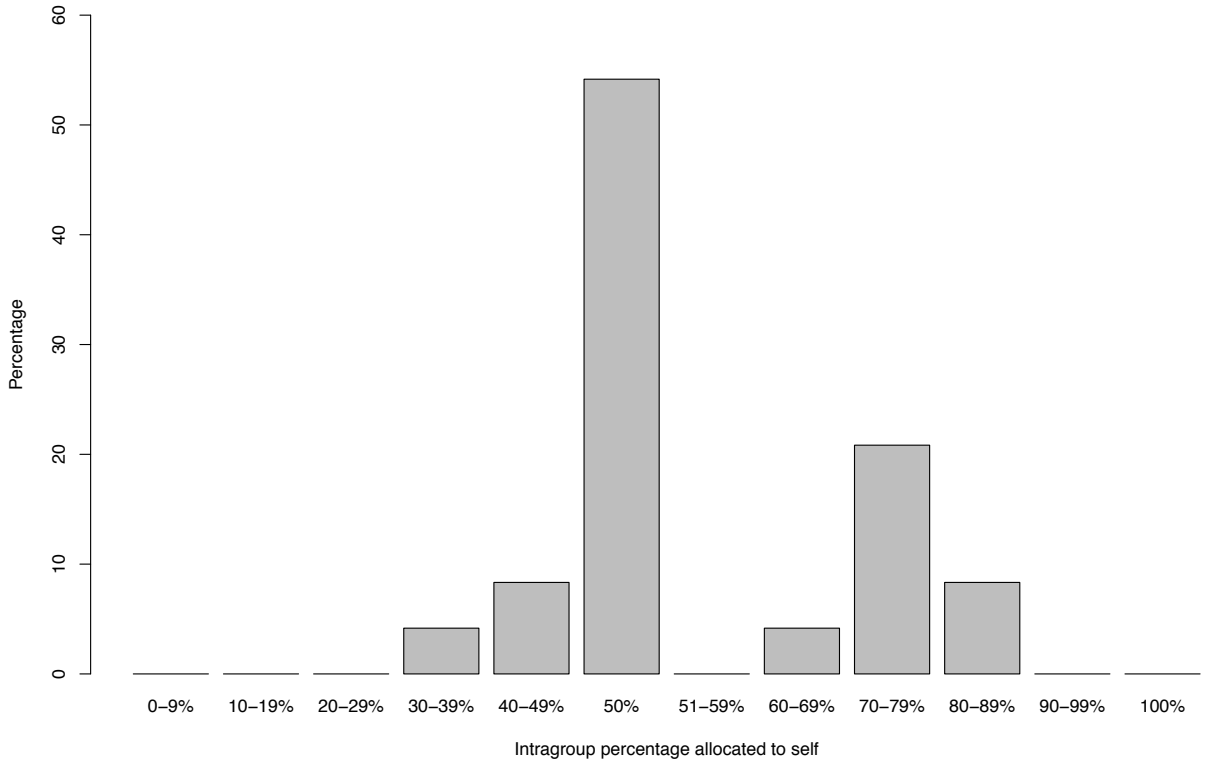


Figure 9. Intragroup distribution of allocation to self.

Although the majority of participants in the intergroup condition between representatives favor an equal allocation of points within their group, there is a second peak between 70 and 79% visible in figure 9. This second peak may suggest that there are individuals that are entirely more self-interested than others, regardless of the person they are interacting with. In order to investigate this supposition, the beliefs about the allocation of points within the group are compared with the allocated points in the previous intergroup dictator game. If the assumption of the existence of individuals universally more self-interested holds, it is expected that individuals allocating the most for their group in the dictator game will also be the ones that assert to keep the most within group allocation. However, this is not the case. Indeed, no correlation is found between the two variables (correlation of 0.052; Appendix 10.4 displays a graphical representation of the relation between the

two variables). Hence, participants keeping more points to themselves within the group are not the ones that are less cooperative in the dictator game.

In conclusion, although the collected data does show a decrease in cooperation between the conditions, the findings on the hypotheses related to the two discerned effects – the in-group effect and the effect of the representative role – do not display any significant result. However, analyzing the results applying the same comparison used in previous studies displays that the interaction between the two effects does influence individuals' cooperation. Indeed, individuals representing a group mate and interacting in an intergroup context demonstrate to be less cooperative. Furthermore, the analysis of the mechanisms behind the representative role exhibits that representatives care about the people they are responsible for, supporting the accountability hypothesis more than the implicit justification hypothesis. Table 7 summarizes the results presented in this chapter in relation to the relative hypotheses.

Table 7: Summary of the results

Hypothesis 1	In situations of intergroup relations conducted by two members of different groups, subjects are less cooperative towards out-group members than in situations of interpersonal relations.	✗
Hypothesis 2	In situations of intergroup relations conducted by representatives, subjects are less cooperative towards out-group members than in situations of intergroup relations conducted by two members of different groups.	✗
Hypothesis 3	Representatives feel accountable for their in-group members and therefore will be cooperative.	✓
Hypothesis 4	The representative role implicitly allows the justification of the pursuit of their selfish interests; therefore, they will be less cooperative with their in-group members.	✗

7 Discussion

The goals of this thesis were to investigate the influence of the representative role on individuals' cooperative behaviors and to find out which mechanism lies behind the effect of the representative role. However, to overcome the methodological shortcoming that characterizes previous studies on the representative role, I decided to develop and use a new experimental design. The design aimed at discerning the in-group favoritism and the representation effect confused in previous studies and at causally determining the relation that representation has with individuals' cooperation.

The practicality of Amazon MTurk as a platform – where a stable and constant subject pool of participants different from the classical student pool in laboratory experiments is present – led me to conduct the experiment online. However, being aware of the disadvantages of the online platform in terms of the composition of the participants' pool, the experimental sample was controlled for the presence of nonnaïvé participants and for the presence of 'spammers'. The sample demographics confirm participants' nonnaïvité to MTurk in general and to economic experiments in particular and that the majority of participants (81%) are full-time employed or self-employed meaning that MTurk is not their main income source. However, these unsurprising results have been shown to not influence the findings of previous studies on MTurk (Horton, Rand, and Zeckhauser 2011; Mason and Suri 2012; Paolacci, Chandler, and Ipeirotis 2010). Indeed, the presented results proved to be robust also when controlling for participants' experience with MTurk and economic games.

In relation to the hypotheses on the two discerned effects on individuals' cooperative behaviors, the results suggest that group members' cooperation level does not differ neither from normal individuals nor from representatives. Indeed, the presented results confirm neither the in-group favoritism effect displayed in other studies (Brewer 1979; Hewstone, Rubin, and Willis 2002; Balliet, Wu, and De Dreu 2014) nor the presented effect of the representative role. However, the non-significance of the results related to both the in-group favoritism effect and the effect of the representative role could have been caused by the inefficacy of the intergroup treatment. Indeed, as the validity check related to the treatment reveals, the imagination procedure used to create minimal groups and an intergroup context for the dictator game appears to partially fail its purpose (42 % of participants did not feel to belong to their group). Thus, participants could have behaved as perceiving to be in an interpersonal context (i.e. they did not identify themselves as group members) also in both the intergroup condition and the intergroup condition between representatives. Although the imagination procedure – in comparison to other procedures – is useful to avoid the participants' deception, the results also lead to question the overall validity of the procedure to create a minimal group in the context of online experiments. As a complement to Pinter and

Greenwald's findings (2011) it is found that in the online environment, the imagination procedure is insufficient to establish an intergroup interaction context.

However, the additional analysis that omitted subjects who gave negative responses to the validity check did not display different results. Thus, although the inefficacy of the intergroup treatment could have played a role, the insignificant results could also be caused by the insufficient strength of the social identity created. Again, different from a physical interaction, the online context could require a stronger social identity to foster an intergroup interaction. A social identity created on the basis of an art preference, then, appears to be an insufficient condition to establish a minimal group. This would explain not only the results regarding the in-group favoritism effect, but also those related to the effect of the representative role, since they are related to the strength of the representative's social identity and the feeling of interacting in an intergroup situation.

By conducting the same comparison used in previous studies to investigate the effect of the representative role on individuals' behaviors (Song, Cadsby, and Morris 2004; Diekmann 1997; Humphrey and Renner 2011), I acquire significant results supporting the thesis that representatives interacting in an intergroup context are less cooperative than individuals interacting in an interpersonal situation. However, differently from previous studies, these results are not interpreted as findings showing the effect of the representative role on individuals' cooperation level individually. Rather, the results are considered as due to the interaction between the in-group favoritism effect and the effect of being a representative. Since being a representative corresponds to a particular type of group member, this comparison does not allow the detachment of the two situations and the understanding of only the actual effect of the representative role. Thus, the methodological criticism highlighted in this thesis still remains important and worth considering for future investigations. Indeed, the question regarding which effect is responsible for the significant difference or in which way the two effects interact could not be answered with the collected results.

The results further display that representatives care about their group mate's opinion and wellbeing. Indeed, representatives seem to feel accountable for the represented in-group members and, therefore, divided the group endowment equally within them. By supporting the theoretical argumentation related to the importance of the represented expectations for representatives (accountability mechanism), the results reject the hypothesis related to the implicit justification mechanism assuming that representatives strategically use their role just to legitimize their self-interest to others.

Since the data on the intragroup distribution of points comes from a hypothetical question in the post-experimental survey, it should be noted that the data is based on beliefs and not on actual behaviors. Therefore, given that the existence of the hypothetical bias (i.e. the difference between

belief and actual behaviors) is a well-documented phenomenon which asserts that the temptation of earning money shifts individuals' behaviors towards more self-interested actions (Neill et al. 1994; Loomis 2011), it can be expected that experimental data would provide a slightly different allocation distribution. Nevertheless, these results display an interesting insight into participants' beliefs that support their feeling of being responsible towards their group mates.

Finally, this thesis – considered as a starting point for an in-depth analysis of the phenomenon of representation – presents a new perspective that tries to solve the previous methodological shortcoming of comparing individuals' behaviors in interpersonal situations with representatives' behaviors in intergroup contexts. Indeed, the results suggest that there is no difference in behaviors between simple group members and group representatives. Although this finding could have been affected by the minimal group procedure applied in the conducted experiment, it still reveals the importance of the new experimental design developed in this thesis; namely, that in order to causally determine the effect of the representative role, representatives' behaviors should be compared to group members' behaviors.

8 Conclusion

The vast presence of the representative role in society calls for a precise causal analysis of the phenomenon. This phenomenon has received a lot of attention in different theoretical traditions: from negotiation studies (Folmer et al. 2012; Blake and Mouton 1961; Druckman, Solomon, and Zechmeister 1972; Benton and Druckman 1974; Haccoun and Klimoski 1975; Enzle, Harvey, and Wright 1992) to classical economic game theoretical approaches (Song, Cadsby, and Morris 2004; Diekmann 1997; Humphrey and Renner 2011). However, this thesis criticizes the methodological approaches of these studies and suggests a new design aimed at investigating how being a representative influences individuals' cooperative behaviors. To my knowledge this study is the first one trying to accomplish this objective by means of applying a new experimental design. Furthermore, the suggested design is not only more accurate from a methodological point of view than previous ones, but by looking at the results, it remains questionable whether previous studies really found an effect of the representative role or just an artefact of the interaction of representative and in-group favoritism effect. Therefore, it remains unresolved whether and to which extent there is something that can be called representative effect in real life.

The results did not support the existence of the effect of the representative role on individuals' cooperation alone. However, I was able to support results from previous studies and provide a better and more methodologically accurate interpretation of the findings: the interaction of the in-group favoritism effect and the effect of the representative role does have an influence on individuals' cooperative behavior. Furthermore, the results provide insights into representatives' care for their group mates. However, whether the representative effect alone actually influences individuals' behaviors still remains an unanswered question.

This thesis was a first step into the causal analysis of the actual effect of the representative role. However, the findings of this thesis display that further studies on the topic are necessary. Specifically, the conducted experiment sheds light on three possible future researches: (1) future analyses comparing group members' and representatives' cooperative behaviors should use a better intergroup induction procedure creating a stronger group identification. These analyses are required to comprehend the causal relation between the representative role and individuals' cooperation level better and to foster new studies on the general effect of the representative role; (2) to improve the understanding of how the representative role works and what mechanism actually lies on the basis of representation, further analysis, comparing accountability and implicit justification aspects, should collect data on actual behaviors and not only on subjects' beliefs; (3) the limitation of the

imagination procedure applied to create minimal groups suggests the need for an in depth investigation into how this procedure works in the online context.

9 Bibliography

Andreoni, James, and B. Douglas Bernheim. 2009. "Social Image and the 50–50 Norm: A Theoretical and Experimental Analysis of Audience Effects." *Econometrica* 77 (5): 1607–36.

Angrist, Joshua David, and Jörn-Steffen Pischke. 2009. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton, Oxford: Princeton University Press.

Balliet, Daniel, Junhui Wu, and Carsten K. W. De Dreu. 2014. "Ingroup Favoritism in Cooperation: A Meta-Analysis." *Psychological Bulletin* 140 (6): 1556–81.

Benton, Alan A., and Daniel Druckman. 1974. "Constituent's Bargaining Orientation and Intergroup Negotiations." *Journal of Applied Social Psychology* 4 (2): 141–50.

Blake, Robert R., and Jane S. Mouton. 1961. "Loyalty of Representatives to Ingroup Positions During Intergroup Competition." *Sociometry* 24 (2): 177–83.

Brewer, Marilynn B. 1979. "In-Group Bias in the Minimal Intergroup Situation: A Cognitive-Motivational Analysis." *Psychological Bulletin* 86 (2): 307–24.

Cason, Timothy N., and Vai-Lam Mui. 1998. "Social Influence in the Sequential Dictator Game." *Monash Economics Working Papers* archive-37. Monash University, Department of Economics.

Chandler, Jesse, Pam Mueller, and Gabriele Paolacci. 2014. "Nonnaïveté among Amazon Mechanical Turk Workers: Consequences and Solutions for Behavioral Researchers." *Behavior Research Methods* 46 (1): 112–30.

Chandler, Jesse, Gabriele Paolacci, Eyal Peer, Pam Mueller, and Kate A. Ratliff. 2015. "Using Nonnaive Participants Can Reduce Effect Sizes." *Psychological Science* 26 (7): 1131–39.

Charness, Gary, and Matthew O. Jackson. 2009. "The Role of Responsibility in Strategic Risk-Taking." *Journal of Economic Behavior & Organization* 69 (3): 241–47.

Chen, Daniel L., Martin Schonger, and Chris Wickens. 2016. "OTree—An Open-Source Platform for Laboratory, Online, and Field Experiments." *Journal of Behavioral and Experimental Finance* 9 (March): 88–97.

Crisp, Richard J., and Rhiannon N. Turner. 2009. "Can Imagined Interactions Produce Positive Perceptions? Reducing Prejudice through Simulated Social Contact." *American Psychologist* 64 (4): 231–40.

Demoulin, Stéphanie, and Carsten K.W. de Dreu. 2010. "Introduction: Negotiation in Intergroup Conflict." *Group Processes & Intergroup Relations* 13 (6): 675–83.

Diekmann, Andreas. 2013. *Spieltheorie: Einführung, Beispiele, Experimente*. 3. überarb. Aufl. Reinbek bei Hamburg: Rowohlt Taschenbuch Verlag.

Diekmann, Kristina A. 1997. "'Implicit Justifications' and Self-Serving Group Allocations." *Journal of Organizational Behavior* 18 (1): 3–16.

Druckman, Daniel. 1994. "Determinants of Compromising Behavior in Negotiation: A Meta-Analysis." *The Journal of Conflict Resolution* 38 (3): 507–56.

Druckman, Daniel, Daniel Solomon, and Kathleen Zechmeister. 1972. "Effects of Representational Role Obligations on the Process of Children's Distribution of Resources." *Sociometry* 35 (3): 387–410.

Engel, Christoph. 2011. "Dictator Games: A Meta Study." *Experimental Economics* 14 (4): 583–610.

Enzle, Michael E., Michael D. Harvey, and Edward F. Wright. 1992. "Implicit Role Obligations versus Social Responsibility in Constituency Representation." *Journal of Personality and Social Psychology* 62 (2): 238–45.

Everett, Jim A. C., Nadira S. Faber, and Molly Crockett. 2015. "Preferences and Beliefs in Ingroup Favoritism." *Frontiers in Behavioral Neuroscience* 9.

Fehr, Ernst, and Klaus M. Schmidt. 1999. "A Theory of Fairness, Competition, and Cooperation." *The Quarterly Journal of Economics* 114 (3): 817–68.

Fischbacher, Urs, Simon Gächter, and Simone Quercia. 2012. "The Behavioral Validity of the Strategy Method in Public Good Experiments." *Journal of Economic Psychology* 33 (4): 897–913.

Folmer, Christopher P. R., Anthon Klapwijk, David De Cremer, and Paul A. M. Van Lange. 2012. "One for All: What Representing a Group May Do to Us." *Journal of Experimental Social Psychology* 48: 1047–56.

Gerber, Alan S., and Donald P. Green. 2012. *Field Experiments: Design, Analysis, and Interpretation*. New York, N.Y: Norton.

Gino, Francesca, and Lamar Pierce. 2009. "Dishonesty in the Name of Equity." *Psychological Science* 20 (9): 1153–60.

Gino, Francesca, Shahar Ayal, and Dan Ariely. 2013. "Self-Serving Altruism? The Lure of Unethical Actions That Benefit Others." *Journal of Economic Behavior & Organization* 93 (September): 285–92.

Greenberg, Jerald. 1983. "Overcoming Egocentric Bias in Perceived Fairness Through Self-Awareness." *Social Psychology Quarterly* 46 (2): 152–56.

Haccoun, Robert R., and Richard J. Klimoski. 1975. "Negotiator Status and Accountability Source: A Study of Negotiator Behavior." *Organizational Behavior and Human Performance* 14 (3): 342–59.

Hauge, Karen Evelyn, and Ole Røgeberg. 2014. "Contributing to Public Goods as Individuals versus Group Representatives: Evidence of Gender Differences." *Memorandum* 16/2014. Oslo University, Department of Economics.

Hewstone, Miles, Mark Rubin, and Hazel Willis. 2002. "Intergroup Bias." *Annual Review of Psychology* 53 (1): 575–604.

Horton, John J., David G. Rand, and Richard J. Zeckhauser. 2011. "The Online Laboratory: Conducting Experiments in a Real Labor Market." *Experimental Economics* 14 (3): 399–425.

Humphrey, Steven J., and Elke Renner. 2011. "The Social Costs of Responsibility." *Discussion Papers*. The Centre for Decision Research and Experimental Economics, School of Economics, University of Nottingham.

Klimoski, Richard J. 1972. "The Effects of Intragroup Forces on Intergroup Conflict Resolution." *Organizational Behavior and Human Performance* 8 (3): 363–83.

Klimoski, Richard J., and Ronald A. Ash. 1974. "Accountability and Negotiator Behavior." *Organizational Behavior and Human Performance* 11 (3): 409–25.

Kunda, Ziva. 1990. "The Case for Motivated Reasoning." *Psychological Bulletin* 108 (3): 480–98.

Lerner, Jennifer S., and Philip E. Tetlock. 1999. "Accounting for the Effects of Accountability." *Psychological Bulletin* 125 (2): 255–75.

List, John A. 2007. "On the Interpretation of Giving in Dictator Games." *Journal of Political Economy* 115 (3): 482–93.

Loomis, John. 2011. "What's to Know About Hypothetical Bias in Stated Preference Valuation Studies?" *Journal of Economic Surveys* 25 (2): 363–70.

Mason, Winter, and Siddharth Suri. 2012. "Conducting Behavioral Research on Amazon's Mechanical Turk." *Behavior Research Methods* 44 (1): 1–23.

Mazar, Nina, On Amir, and Dan Ariely. 2008. "The Dishonesty of Honest People: A Theory of Self-Concept Maintenance." *SSRN Scholarly Paper* ID 979648. Rochester, NY: Social Science Research Network.

Neill, Helen R., Ronald G. Cummings, Philip T. Ganderton, Glenn W. Harrison, and Thomas McGuckin. 1994. "Hypothetical Surveys and Real Economic Commitments." *Land Economics* 70 (2): 145–54.

Oppenheimer, Daniel M., Tom Meyvis, and Nicolas Davidenko. 2009. "Instructional Manipulation Checks: Detecting Satisficing to Increase Statistical Power." *Journal of Experimental Social Psychology* 45 (4): 867–72.

Oxoby, Robert J, and Kendra N McLeish. 2004. "Sequential Decision and Strategy Vector Methods in Ultimatum Bargaining: Evidence on the Strength of Other-Regarding Behavior."

Economics Letters 84 (3): 399–405.

Paolacci, Gabriele, Jesse Chandler, and Panagiotis G. Ipeirotis. 2010. "Running Experiments on Amazon Mechanical Turk." *Judgment and Decision Making* 5 (5): 411–19.

Pinter, Brad, and Anthony G. Greenwald. 2011. "A Comparison of Minimal Group Induction Procedures." *Group Processes & Intergroup Relations* 14 (1): 81–98.

Reis, Harry T. 1987. "The Nature of the Justice Motive: Some Thoughts on Operation, Internalization, and Justification." P. 131–50, In *Social Comparison, Social Justice, and Relative Deprivation: Theoretical, Empirical, and Policy Perspectives*, edited by John C. Master and William P. Smith. Hillsdale, NJ, US: Lawrence Erlbaum Associates, Inc.

Roth, Alvin E. 1995. "Bargaining Experiments." P. 253–348, In *Handbook of Experimental Economics*, edited by John Kagel and Alvin E. Roth. Princeton, Oxford: Princeton University Press.

Schlenker, Barry R., Thomas W. Britt, John Pennington, Rodolfo Murphy, and Kevin Doherty. 1994. "The Triangle Model of Responsibility." *Psychological Review* 101 (4): 632–52.

Selten, Reinhard. 1967. "Die Strategiemethode Zur Erforschung Des Eingeschränkt Rationalen Verhaltens Im Rahmen Eines Oligopolexperimentes." P. 136-168, In *Beiträge Zur Experimentellen Wirtschaftforschung*, edited by Heinz Sauermann. Tübingen: J. C. B. Mohr.

Song, Fei. 2008. "Trust and Reciprocity Behavior and Behavioral Forecasts: Individuals versus Group-Representatives." *Games and Economic Behavior* 62 (2): 675–96.

Song, Fei, Charles Bram Cadsby, and Tristan Morris. 2004. "Other-Regarding Behavior and Behavioral Forecasts: Females Versus Males as Individuals and as Group Representatives." *SSRN Scholarly Paper* ID 604526. Rochester, NY: Social Science Research Network.

Steinel, W., G. A. Van Kleef, D. van Knippenberg, M. A. Hogg, A. C. Homan, and G. Moffit. 2010. "How Intragroup Dynamics Affect Behavior in Intergroup Conflict: The Role of Group Norms, Prototypicality, and Need to Belong." *Group Processes and Intergroup Relations* 13: 779–94.

Tajfel, Henri, M. G. Billig, R. P. Bundy, and Claude Flament. 1971. "Social Categorization and Intergroup Behaviour." *European Journal of Social Psychology* 1 (2): 149–78.

Tajfel, Henry, and John Turner. 1979. "An Integrative Theory of Intergroup Conflict." In *The Social Psychology of Intergroup Relations*, P. 33–4, edited by William G. Austin and Stephen Worchel. Monterey. Calif: Brooks/Cole Pub. Co.

Tetlock, Philip E. 1992. "The Impact of Accountability on Judgment and Choice: Toward a Social Contingency Model." *Advances in Experimental Social Psychology* 25 (C): 331–76.

Trötschel, Roman, Joachim Hüffmeier, and David D. Loschelder. 2010. "When Yielding Pieces of

the Pie Is Not a Piece of Cake: Identity-Based Intergroup Effects in Negotiations." *Group Processes & Intergroup Relations* 13 (6): 741–63.

Turner, Rhiannon N., and Richard J. Crisp. 2010. "Imagining Intergroup Contact Reduces Implicit Prejudice." *British Journal of Social Psychology* 49 (1): 129–42.

Turner, Rhiannon N., Richard J. Crisp, and Emily Lambert. 2007. "Imagining Intergroup Contact Can Improve Intergroup Attitudes." *Group Processes & Intergroup Relations* 10 (4): 427–41.

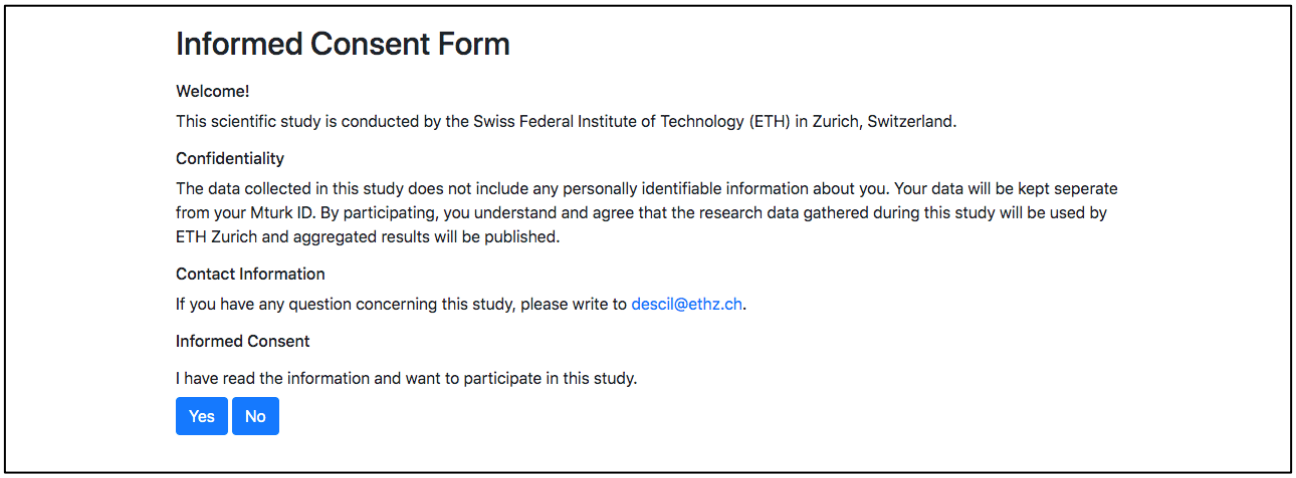
Wiltermuth, Scott S. 2011. "Cheating More When the Spoils Are Split." *Organizational Behavior and Human Decision Processes* 115 (2): 157–68.

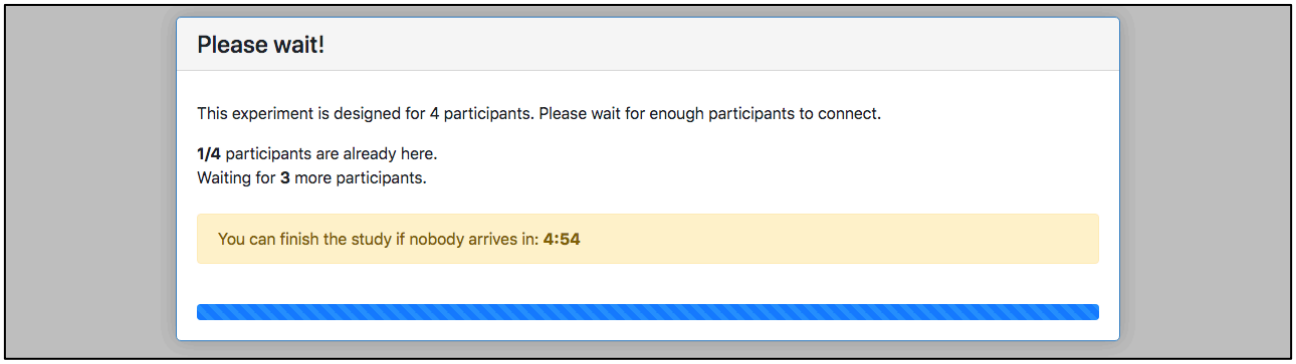
10 Appendix

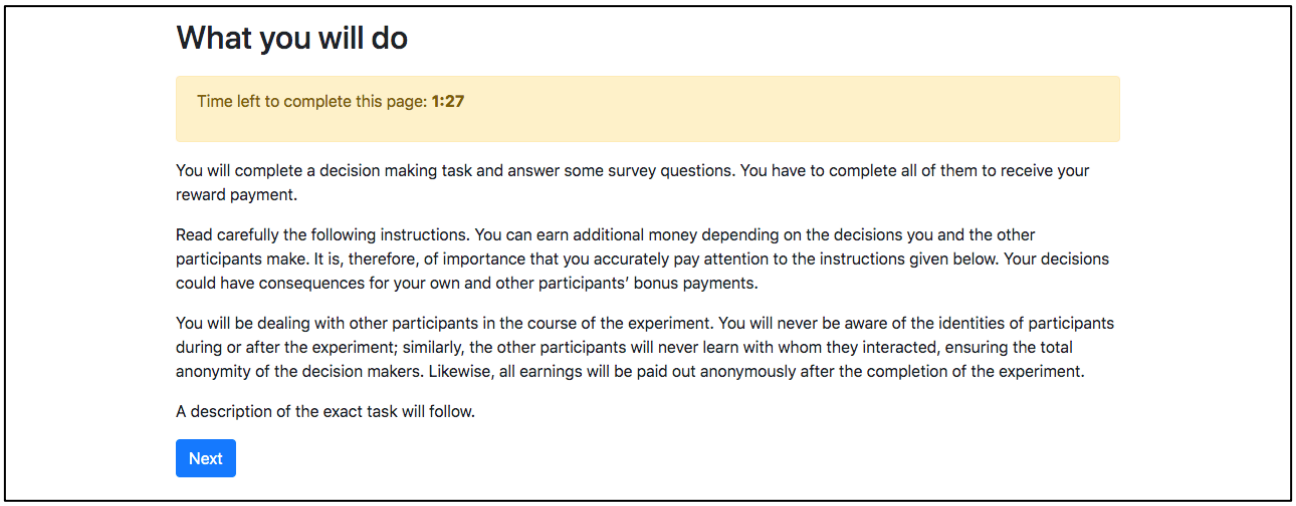
10.1 Experiment

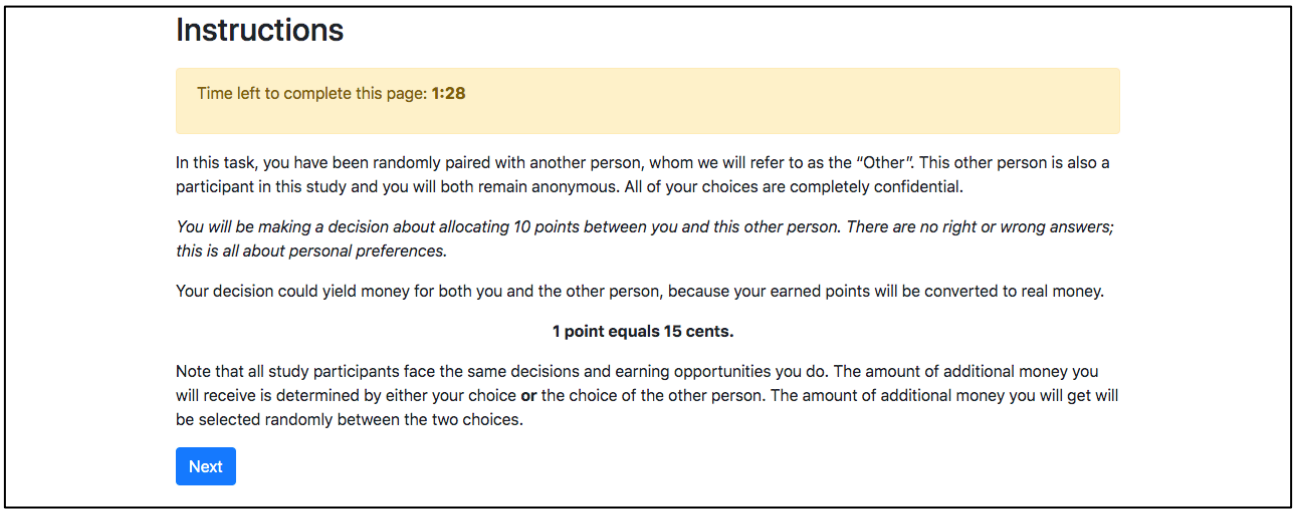
In the following section all the experimental screens for each of the three conditions are presented, as well as how the possibility to dropout from the experiment was displayed to the participants.

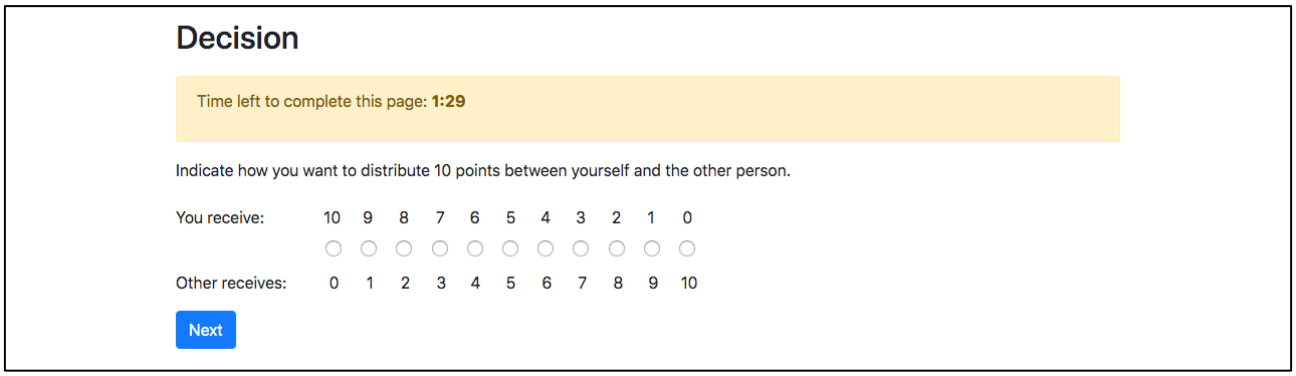
10.1.1 Interpersonal Condition

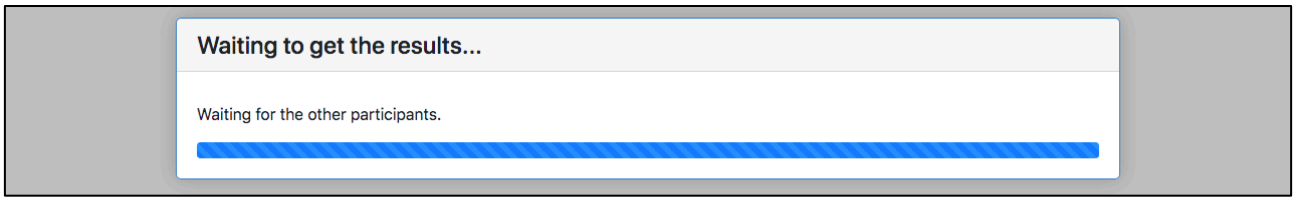


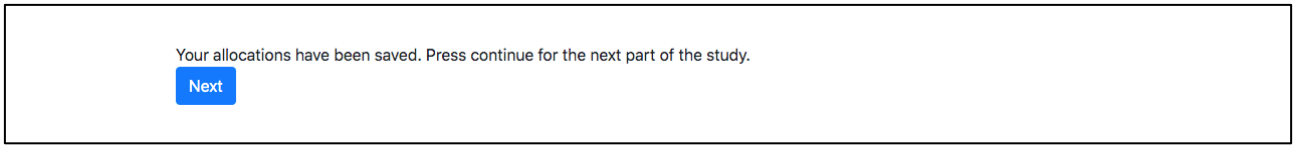


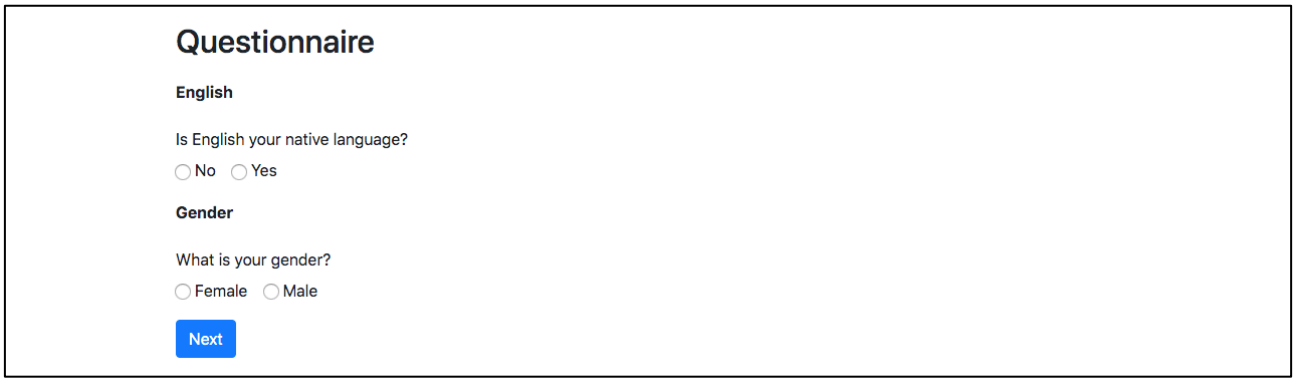


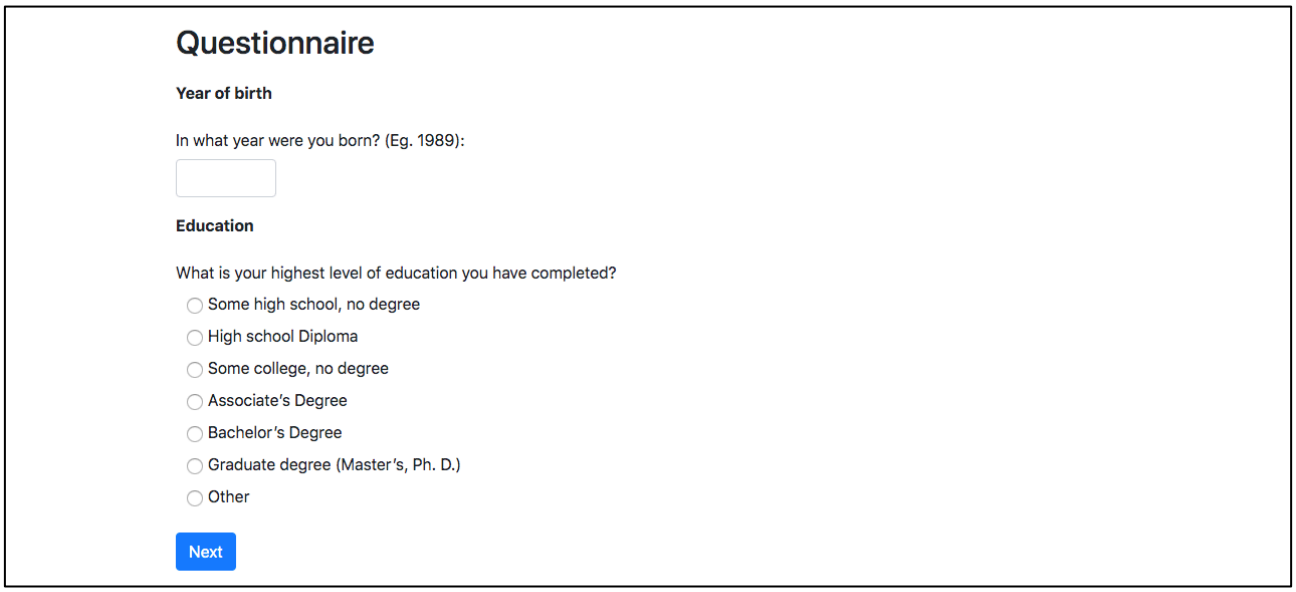

Instructions
Time left to complete this page: 1:28
In this task, you have been randomly paired with another person, whom we will refer to as the "Other". This other person is also a participant in this study and you will both remain anonymous. All of your choices are completely confidential.
You will be making a decision about allocating 10 points between you and this other person. There are no right or wrong answers; this is all about personal preferences.
Your decision could yield money for both you and the other person, because your earned points will be converted to real money.
1 point equals 15 cents.
Note that all study participants face the same decisions and earning opportunities you do. The amount of additional money you will receive is determined by either your choice or the choice of the other person. The amount of additional money you will get will be selected randomly between the two choices.
Next

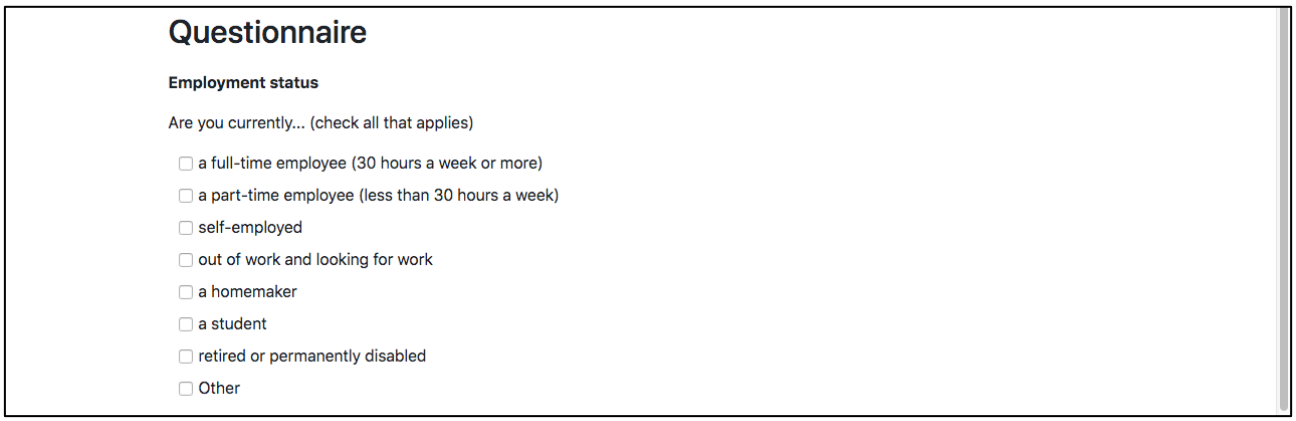

Decision
Time left to complete this page: 1:29
Indicate how you want to distribute 10 points between yourself and the other person.
You receive: 10 9 8 7 6 5 4 3 2 1 0
Other receives: 0 1 2 3 4 5 6 7 8 9 10
Next

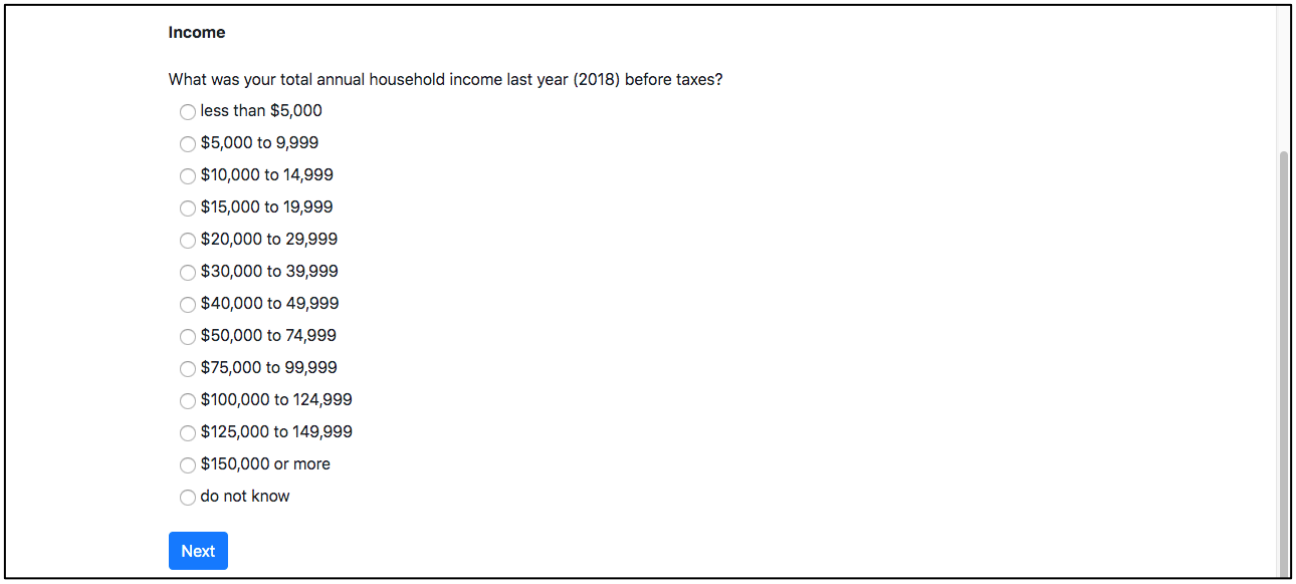

Waiting to get the results...
Waiting for the other participants.

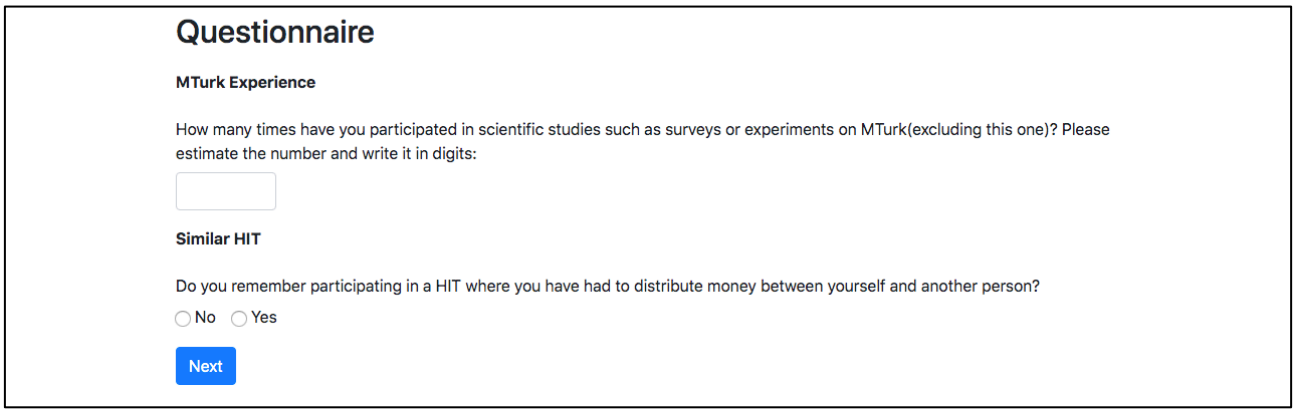

Your allocations have been saved. Press continue for the next part of the study.
Next

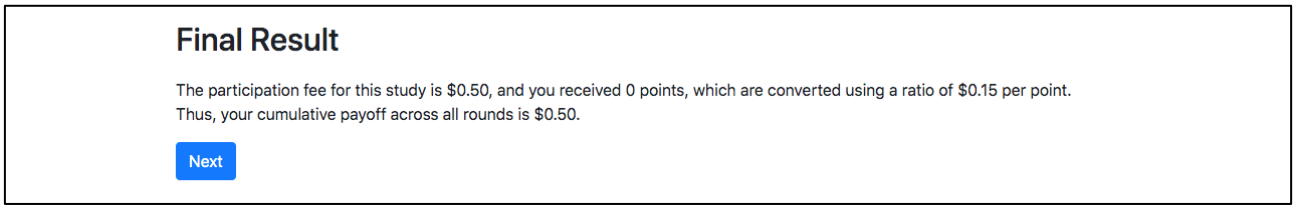

Questionnaire
English
Is English your native language?
No Yes
Gender
What is your gender?
Female Male
Next

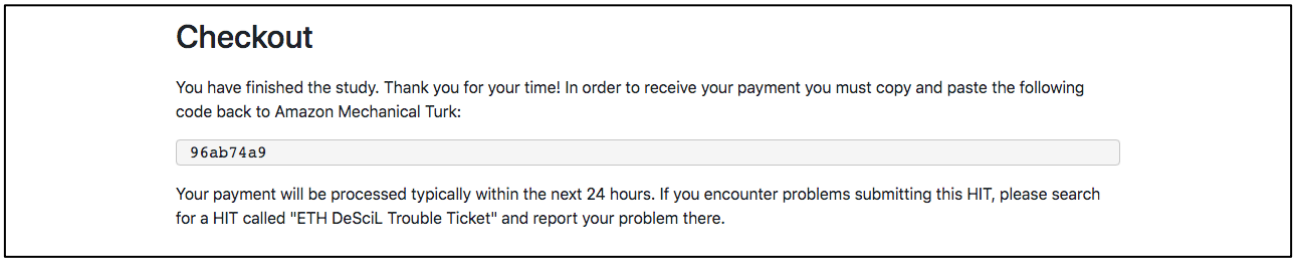

Questionnaire
Year of birth
In what year were you born? (Eg. 1989):
Education
What is your highest level of education you have completed?
Some high school, no degree
High school Diploma
Some college, no degree
Associate's Degree
Bachelor's Degree
Graduate degree (Master's, Ph. D.)
Other
Next


Questionnaire
Employment status
Are you currently... (check all that applies)
a full-time employee (30 hours a week or more)
a part-time employee (less than 30 hours a week)
self-employed
out of work and looking for work
a homemaker
a student
retired or permanently disabled
Other

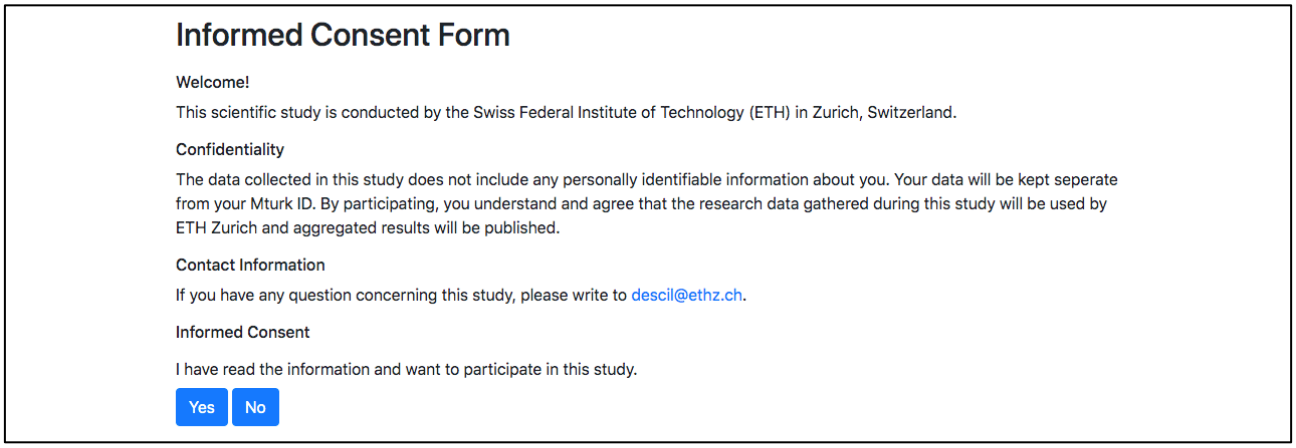

Income
What was your total annual household income last year (2018) before taxes?
less than $5,000
$5,000 to 9,999
$10,000 to 14,999
$15,000 to 19,999
$20,000 to 29,999
$30,000 to 39,999
$40,000 to 49,999
$50,000 to 74,999
$75,000 to 99,999
$100,000 to 124,999
$125,000 to 149,999
$150,000 or more
do not know
Next

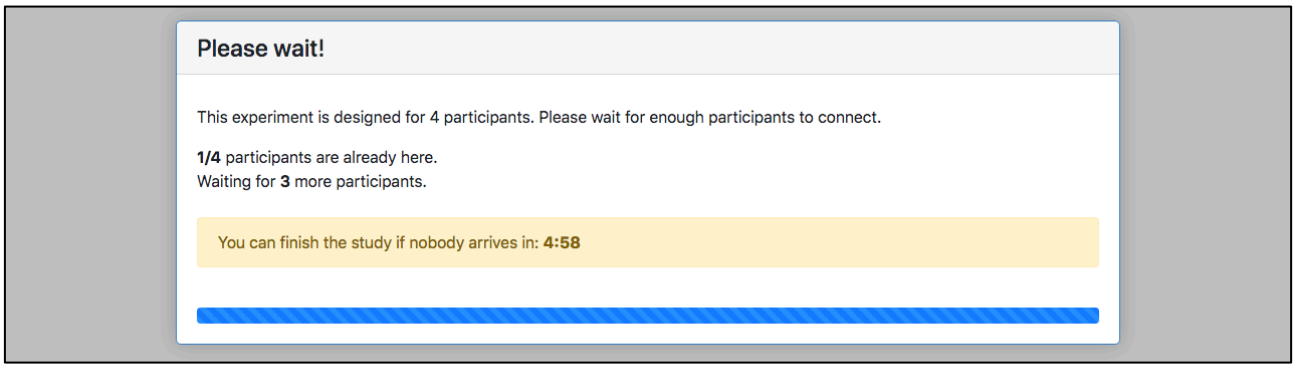


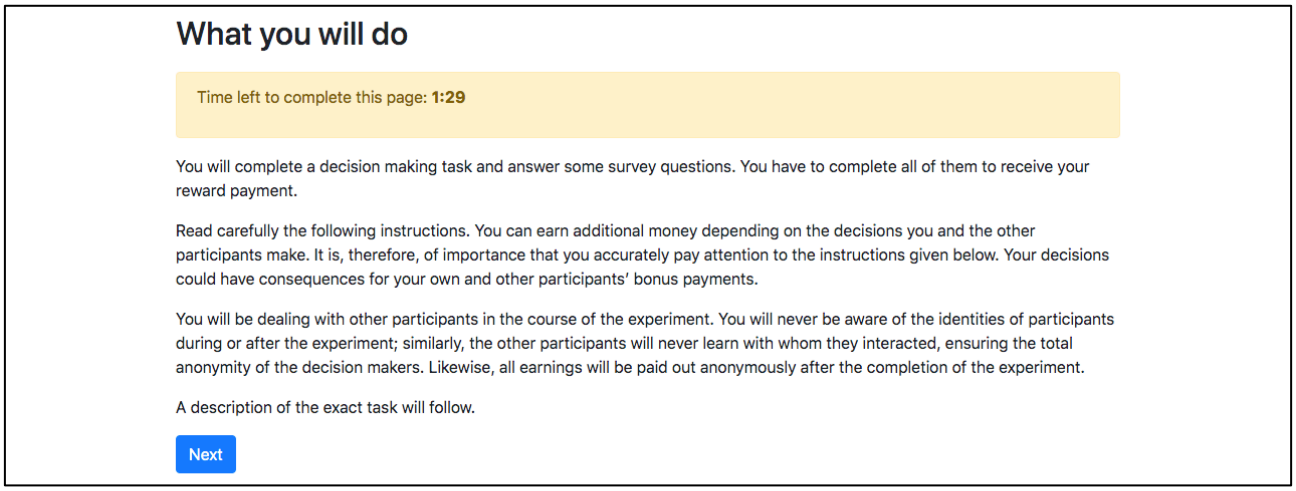


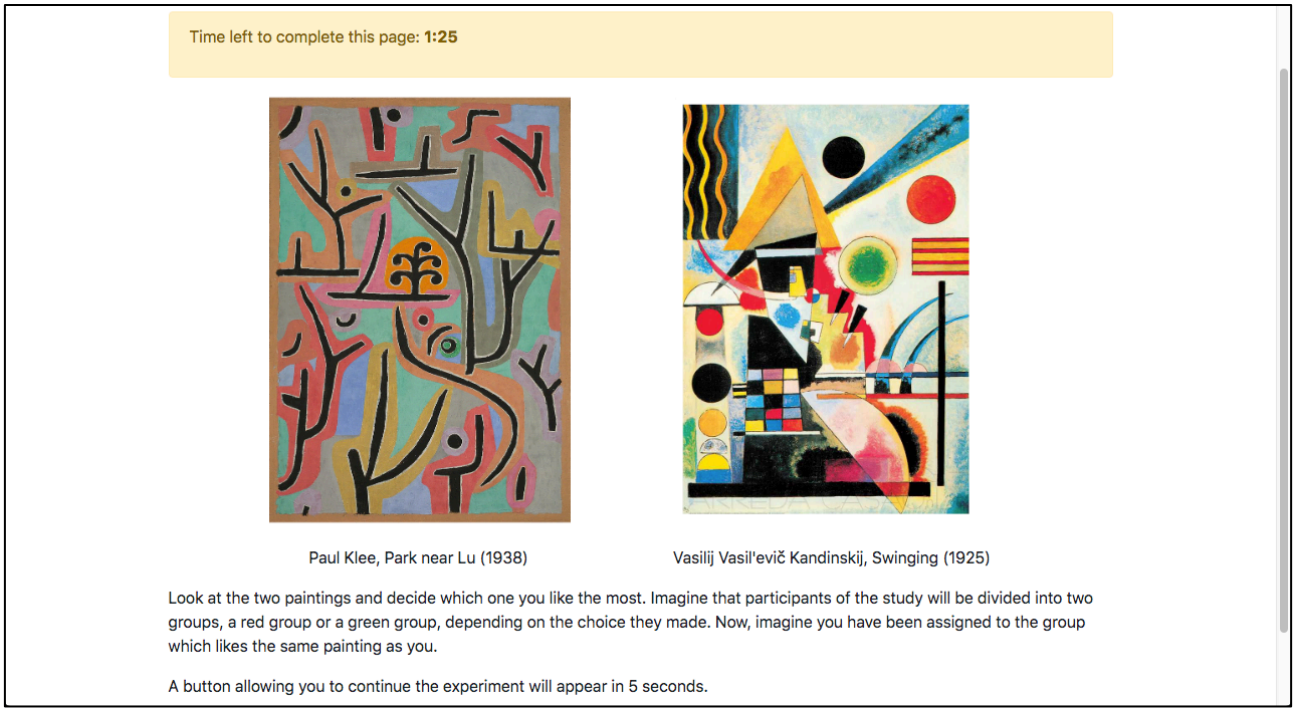


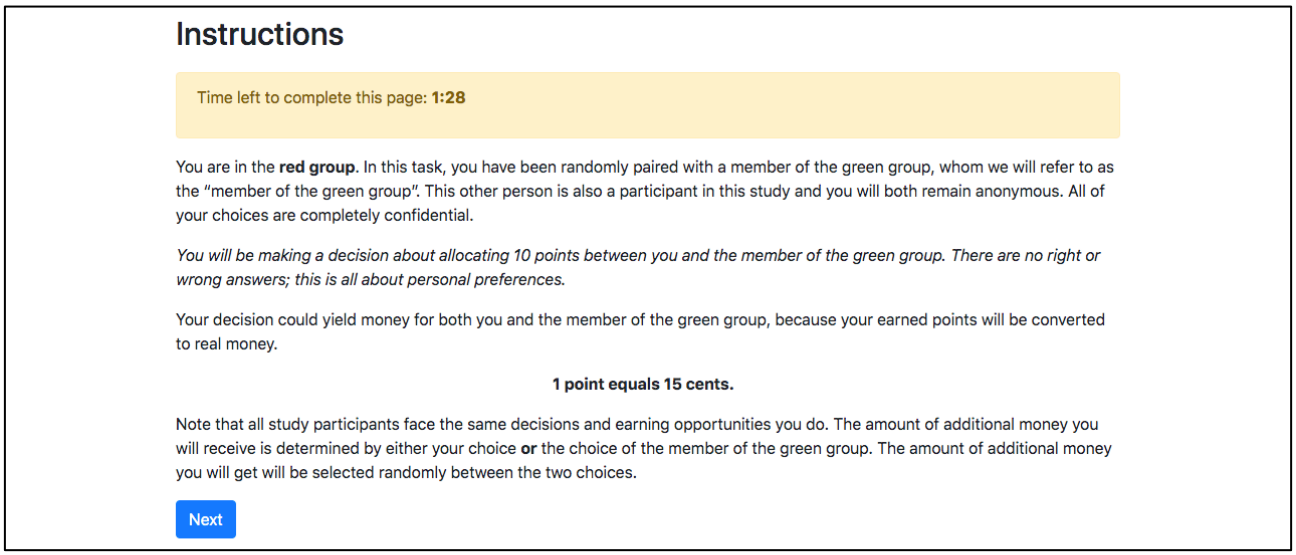
10.1.2 Intergroup Condition

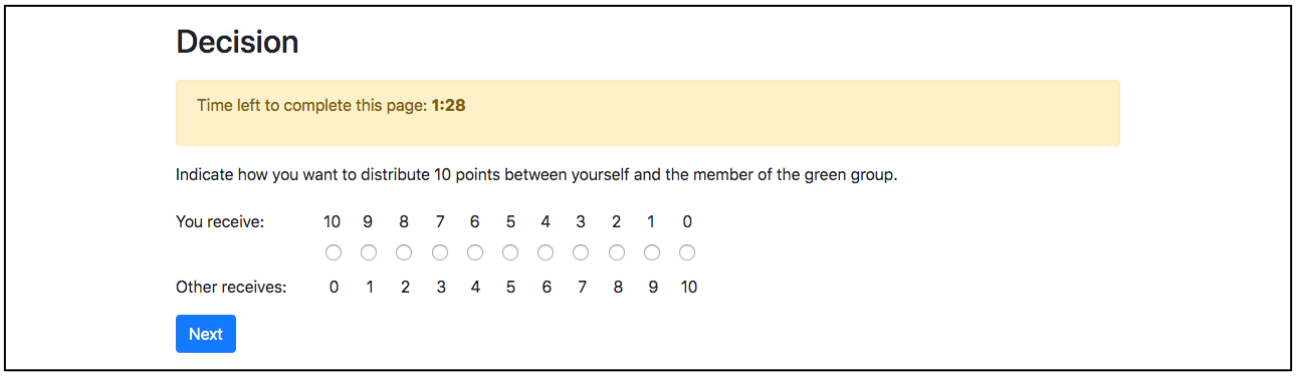


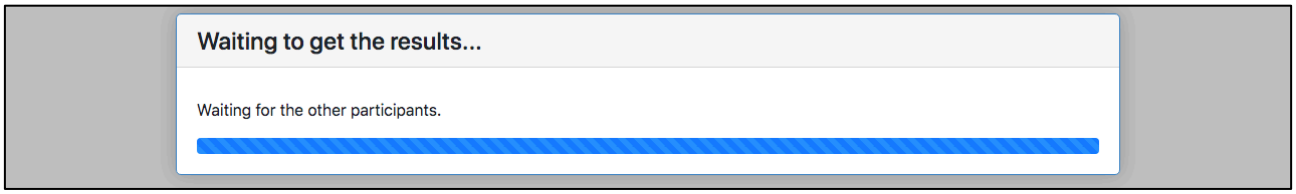

Please wait!
This experiment is designed for 4 participants. Please wait for enough participants to connect.
1/4 participants are already here.
Waiting for 3 more participants.
You can finish the study if nobody arrives in: 4:58

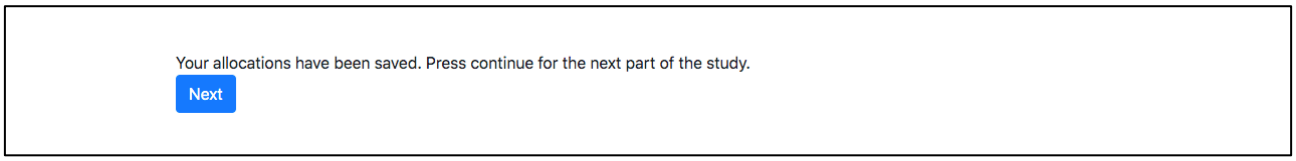

What you will do
Time left to complete this page: 1:29
You will complete a decision making task and answer some survey questions. You have to complete all of them to receive your reward payment.
Read carefully the following instructions. You can earn additional money depending on the decisions you and the other participants make. It is, therefore, of importance that you accurately pay attention to the instructions given below. Your decisions could have consequences for your own and other participants' bonus payments.
You will be dealing with other participants in the course of the experiment. You will never be aware of the identities of participants during or after the experiment; similarly, the other participants will never learn with whom they interacted, ensuring the total anonymity of the decision makers. Likewise, all earnings will be paid out anonymously after the completion of the experiment.
A description of the exact task will follow.
Next


Time left to complete this page: 1:25
Paul Klee, Park near Lu (1938)
Vasilij Vasil'evič Kandinskij, Swinging (1925)
Look at the two paintings and decide which one you like the most. Imagine that participants of the study will be divided into two groups, a red group or a green group, depending on the choice they made. Now, imagine you have been assigned to the group which likes the same painting as you.
A button allowing you to continue the experiment will appear in 5 seconds.

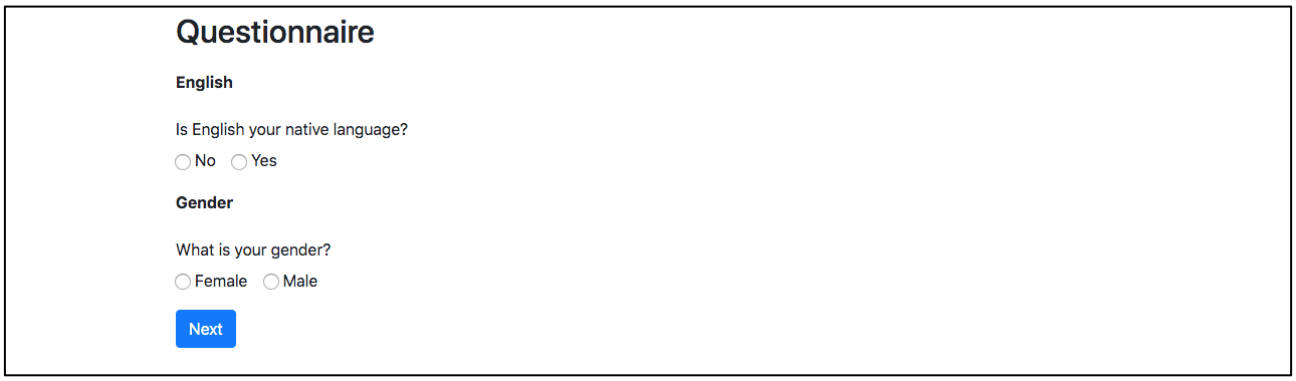

Instructions
Time left to complete this page: 1:28
You are in the red group. In this task, you have been randomly paired with a member of the green group, whom we will refer to as the "member of the green group". This other person is also a participant in this study and you will both remain anonymous. All of your choices are completely confidential.
You will be making a decision about allocating 10 points between you and the member of the green group. There are no right or wrong answers; this is all about personal preferences.
Your decision could yield money for both you and the member of the green group, because your earned points will be converted to real money.
1 point equals 15 cents.
Note that all study participants face the same decisions and earning opportunities you do. The amount of additional money you will receive is determined by either your choice or the choice of the member of the green group. The amount of additional money you will get will be selected randomly between the two choices.
Next

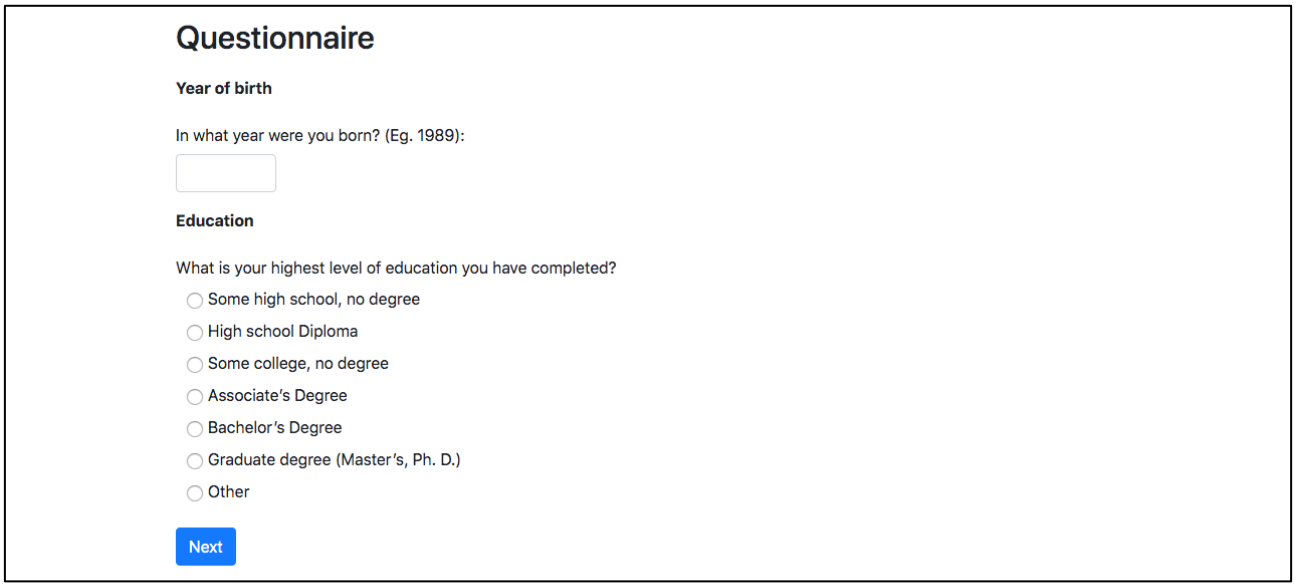

Decision
Time left to complete this page: 1:28
Indicate how you want to distribute 10 points between yourself and the member of the green group.
You receive: 10 9 8 7 6 5 4 3 2 1 0
Other receives: 0 1 2 3 4 5 6 7 8 9 10
Next

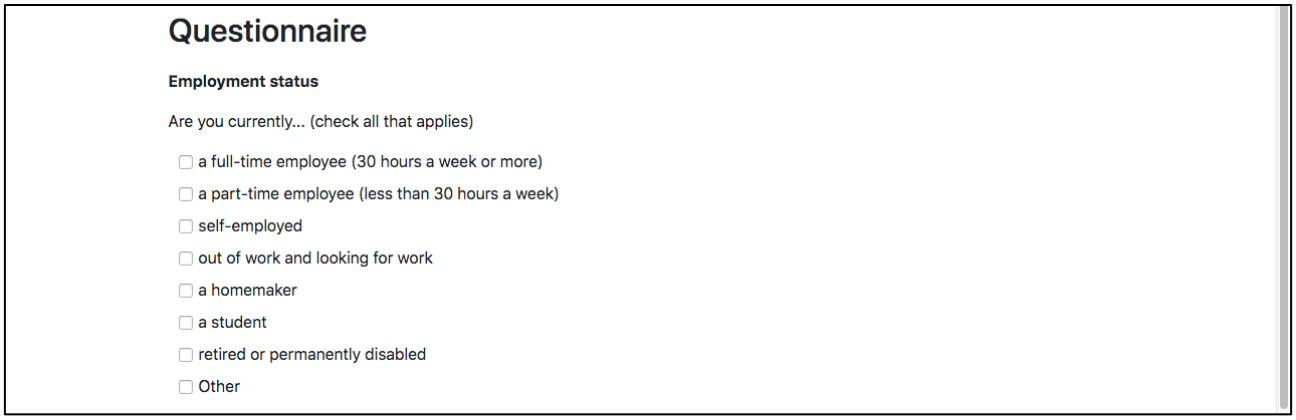

Waiting to get the results...
Waiting for the other participants.

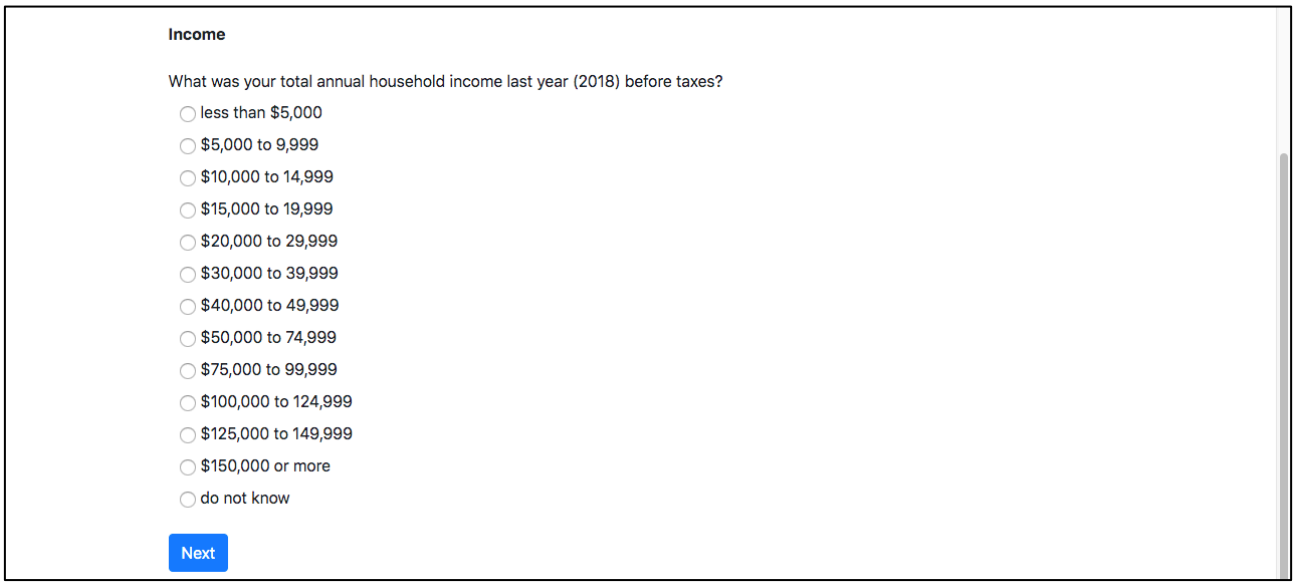

Your allocations have been saved. Press continue for the next part of the study.
Next

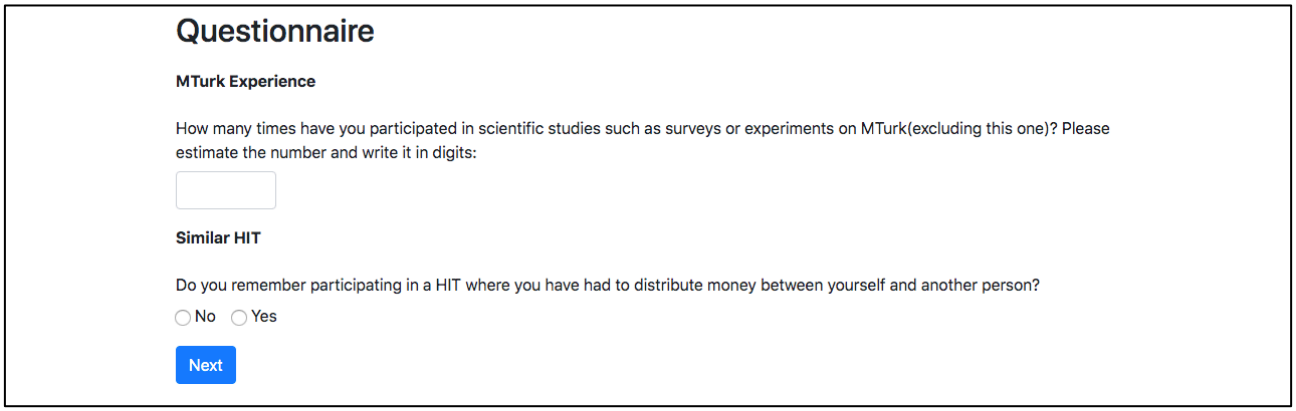

Questionnaire
Personal Opinion
On a scale from 'Strongly Disagree' to 'Strongly Agree', how much do you agree with this statement: I really felt that I was part of my group.
Strongly Disagree Disagree Neutral Agree Strongly Agree
Next

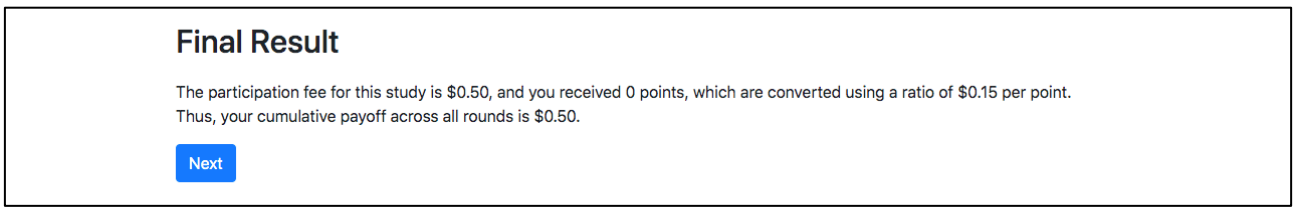

Questionnaire
English
Is English your native language?
No
Yes
Gender
What is your gender?
Female
Male
Next

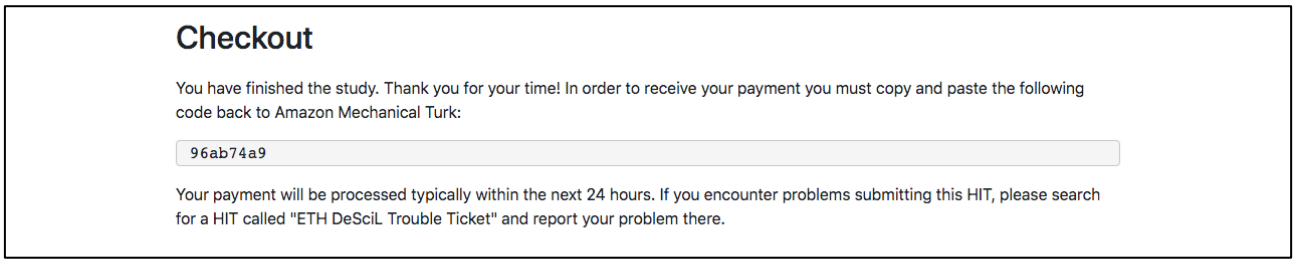

Questionnaire
Year of birth
In what year were you born? (Eg. 1989):
Education
What is your highest level of education you have completed?
Some high school, no degree
High school Diploma
Some college, no degree
Associate's Degree
Bachelor's Degree
Graduate degree (Master's, Ph. D.)
Other
Next


Questionnaire
Employment status
Are you currently... (check all that applies)
a full-time employee (30 hours a week or more)
a part-time employee (less than 30 hours a week)
self-employed
out of work and looking for work
a homemaker
a student
retired or permanently disabled
Other

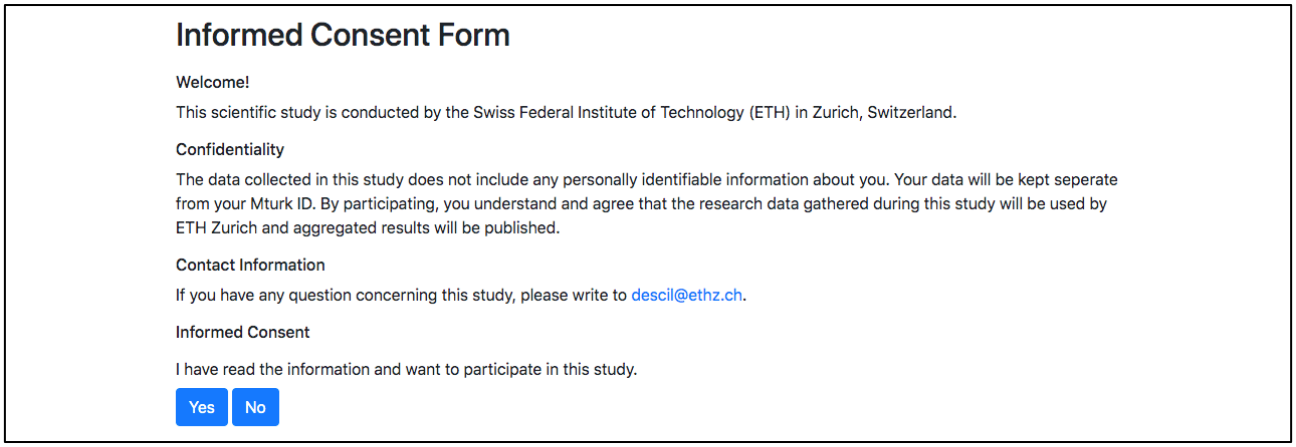

Income
What was your total annual household income last year (2018) before taxes?
less than $5,000
$5,000 to 9,999
$10,000 to 14,999
$15,000 to 19,999
$20,000 to 29,999
$30,000 to 39,999
$40,000 to 49,999
$50,000 to 74,999
$75,000 to 99,999
$100,000 to 124,999
$125,000 to 149,999
$150,000 or more
do not know
Next

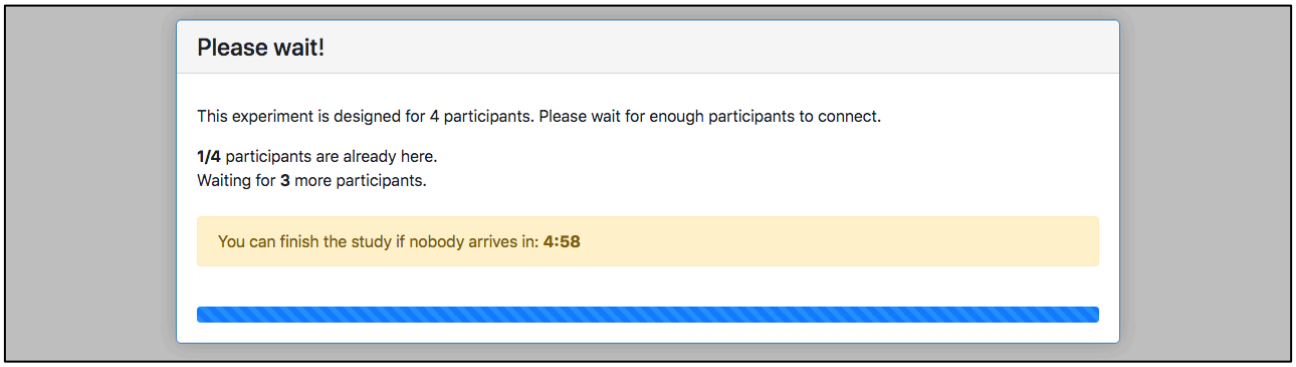

Questionnaire
MTurk Experience
How many times have you participated in scientific studies such as surveys or experiments on MTurk(excluding this one)? Please estimate the number and write it in digits:
Similar HIT
Do you remember participating in a HIT where you have had to distribute money between yourself and another person?
No
Yes
Next

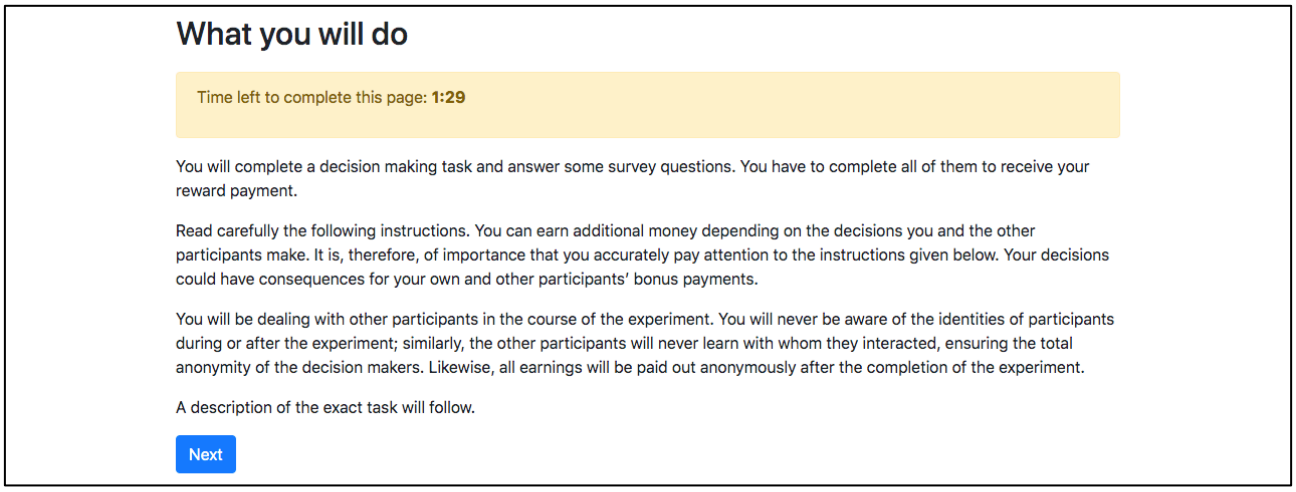

Final Result
The participation fee for this study is $0.50, and you received 0 points, which are converted using a ratio of $0.15 per point.
Thus, your cumulative payoff across all rounds is $0.50.
Next


Checkout
You have finished the study. Thank you for your time! In order to receive your payment you must copy and paste the following code back to Amazon Mechanical Turk:
96ab74a9
Your payment will be processed typically within the next 24 hours. If you encounter problems submitting this HIT, please search for a HIT called "ETH DeSciL Trouble Ticket" and report your problem there.

10.1.3 Intergroup Condition Between Representative

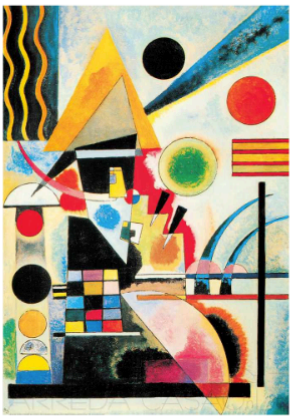






Time left to complete this page: **1:25**

Paul Klee, Park near Lu (1938)



Vasilij Vasil'evič Kandinskij, Swinging (1925)

Look at the two paintings and decide which one you like the most. Imagine that participants of the study will be divided into two groups, a red group or a green group, depending on the choice they made. Now, imagine you have been assigned to the group which likes the same painting as you.

A button allowing you to continue the experiment will appear in 5 seconds.

Instructions

Time left to complete this page: **1:28**

You are in the **red group**. In this task, you have been randomly paired with a member of the red group to form a pair. At the same time, you and your group mate will be matched with a pair composed of two members of the green group, whom we will refer to as the "members of the green group". All these people are participants in this study and will remain all anonymous. All of your choices are completely confidential.

*You will be making a decision **on behalf of yourself and your group mate** about allocating 20 points between the two pairs. The allocated money will be then divided equally between the two members of the two pairs. There are no right or wrong answers; this is all about personal preferences.*

Your decision could yield money for both you and your group mate and the two member of the green group, because your earned points will be converted into real money.

1 point equals 15 cents.

Note that all study participants face the same decisions and earning opportunities you do. The amount of additional money you will receive is determined by either your choice **or** the choice of one of the three other participants you are interacting with (your group mate or the two members of the green group). The amount of additional money you will get will be selected randomly between the four choices.

Next

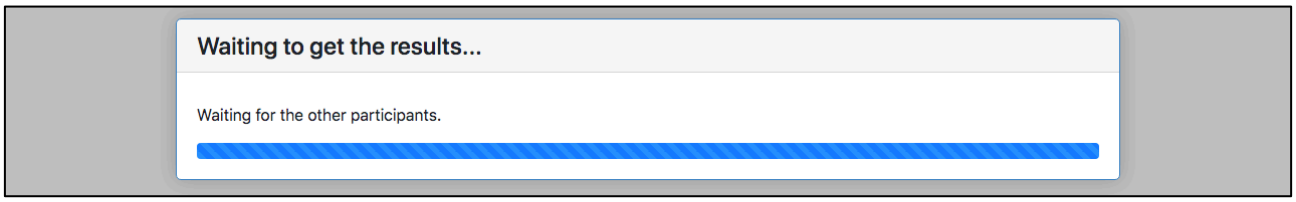
Decision

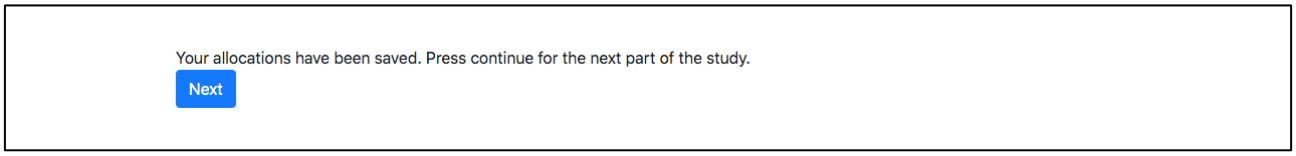
Time left to complete this page: **1:29**

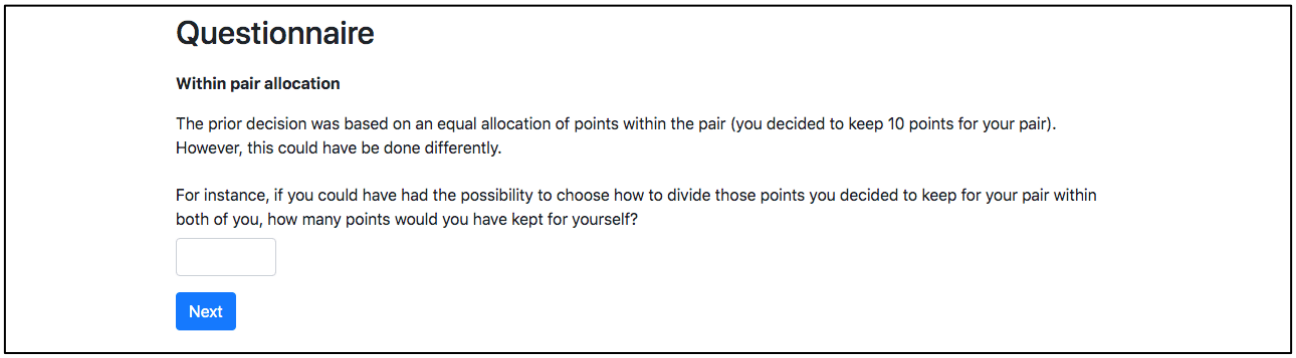
Indicate how you want to distribute 20 points between your pair and the other two members of the green group

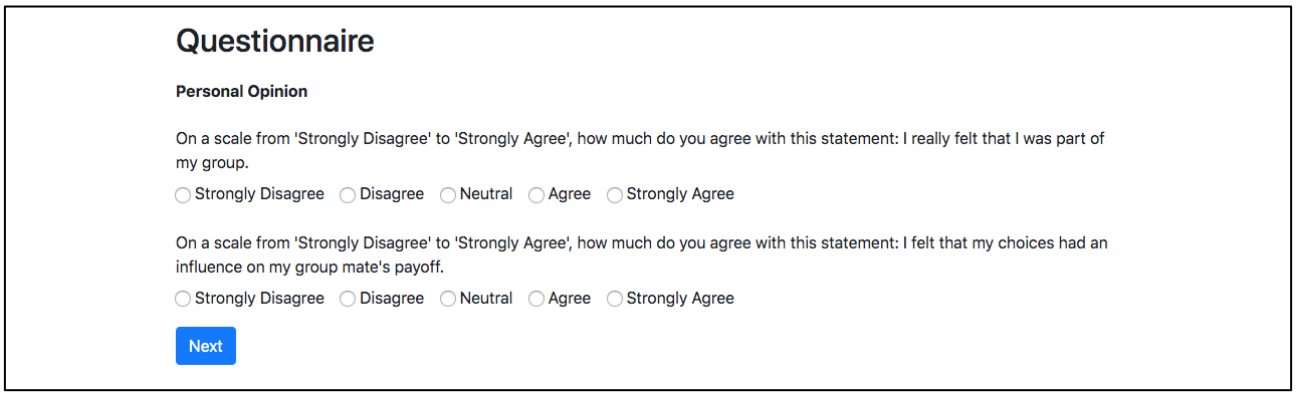
Your pair receive:	20	18	16	14	12	10	8	6	4	2	0
Other pair receives:	0	2	4	6	8	10	12	14	16	18	20

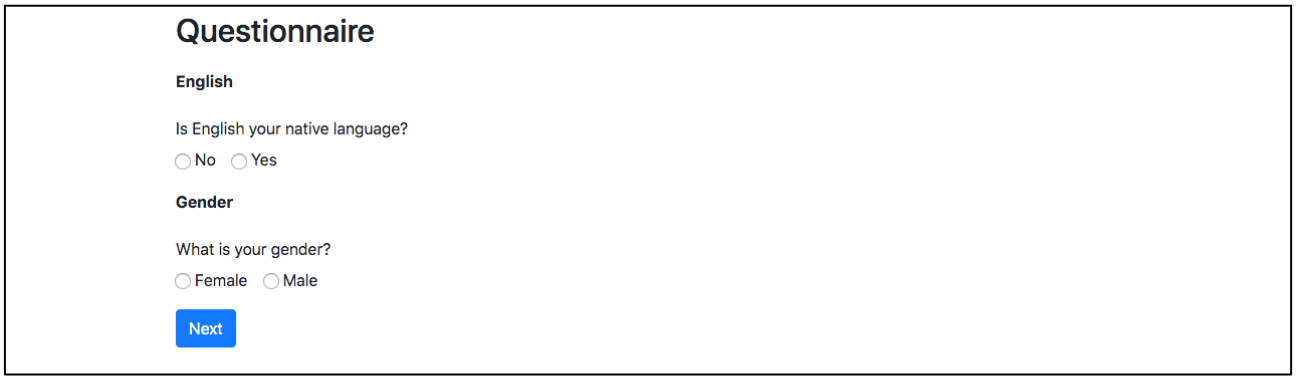
Next

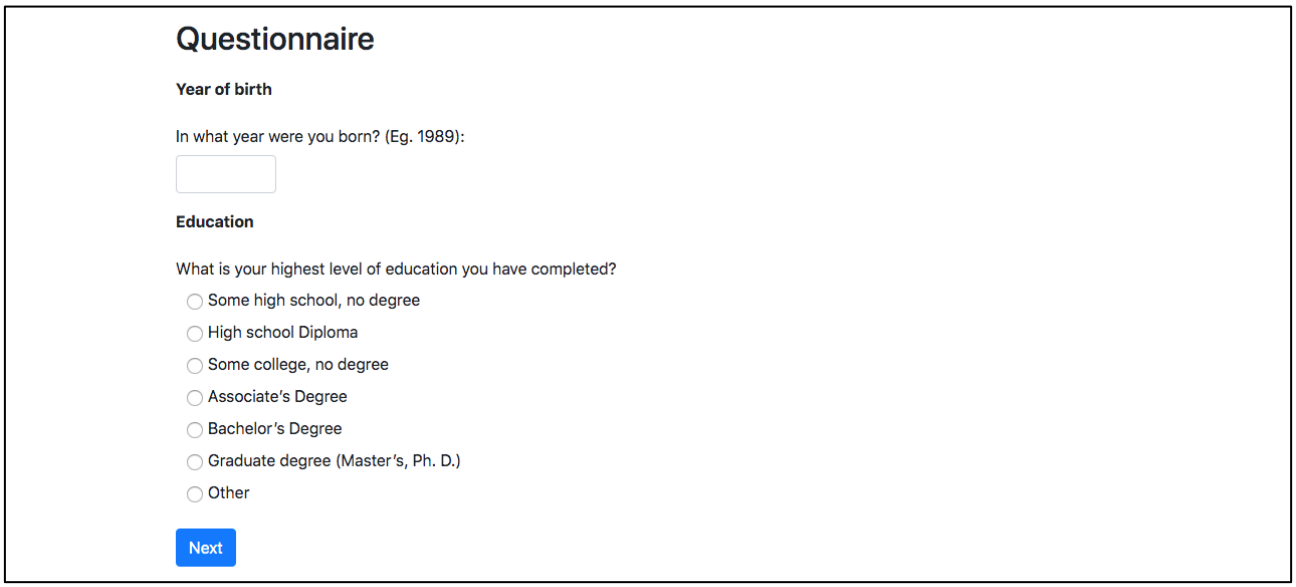

Waiting to get the results...
Waiting for the other participants.


Your allocations have been saved. Press continue for the next part of the study.
Next


Questionnaire
Within pair allocation
The prior decision was based on an equal allocation of points within the pair (you decided to keep 10 points for your pair). However, this could have be done differently.
For instance, if you could have had the possibility to choose how to divide those points you decided to keep for your pair within both of you, how many points would you have kept for yourself?
Next


Questionnaire
Personal Opinion
On a scale from 'Strongly Disagree' to 'Strongly Agree', how much do you agree with this statement: I really felt that I was part of my group.
Strongly Disagree Disagree Neutral Agree Strongly Agree
On a scale from 'Strongly Disagree' to 'Strongly Agree', how much do you agree with this statement: I felt that my choices had an influence on my group mate's payoff.
Strongly Disagree Disagree Neutral Agree Strongly Agree
Next


Questionnaire
English
Is English your native language?
No Yes
Gender
What is your gender?
Female Male
Next



Questionnaire

Year of birth

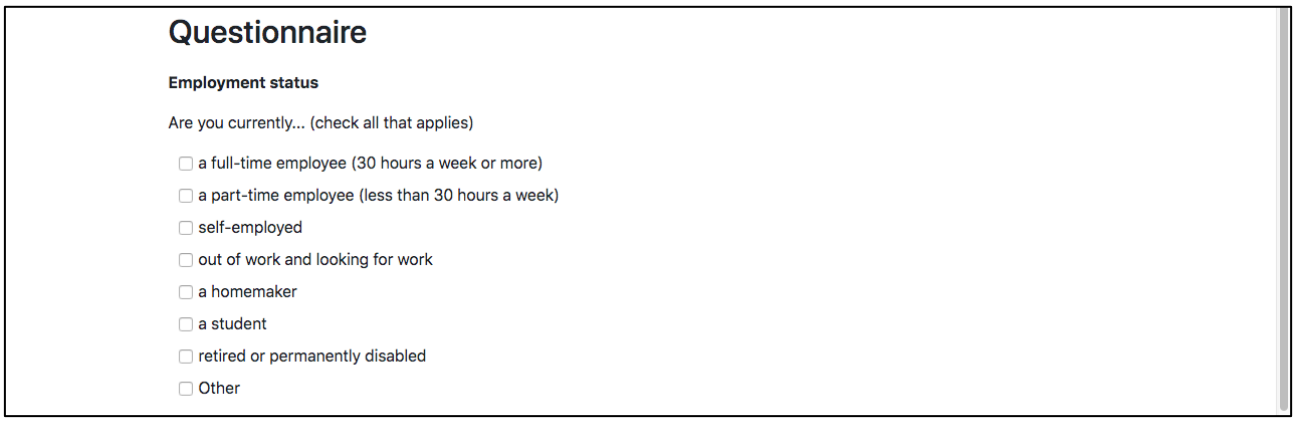
In what year were you born? (Eg. 1989):

Education

What is your highest level of education you have completed?

- ○ Some high school, no degree
- ○ High school Diploma
- ○ Some college, no degree
- ○ Associate's Degree
- ○ Bachelor's Degree
- ○ Graduate degree (Master's, Ph. D.)
- ○ Other

Next

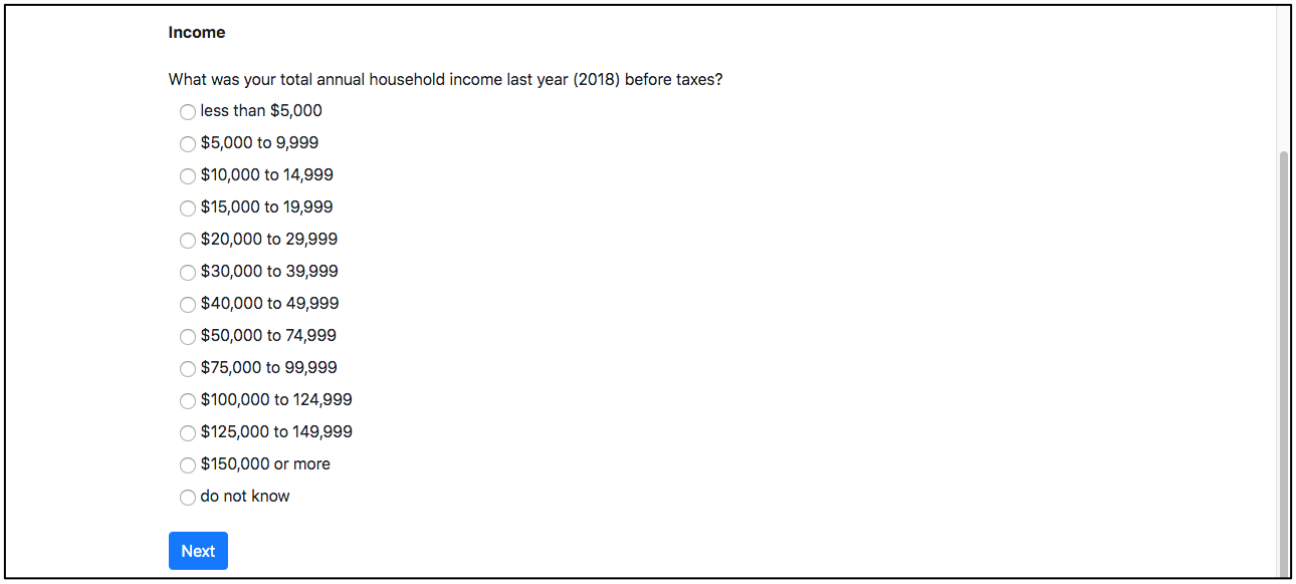


Questionnaire

Employment status

Are you currently... (check all that applies)

- ☐ a full-time employee (30 hours a week or more)
- ☐ a part-time employee (less than 30 hours a week)
- ☐ self-employed
- ☐ out of work and looking for work
- ☐ a homemaker
- ☐ a student
- ☐ retired or permanently disabled
- ☐ Other

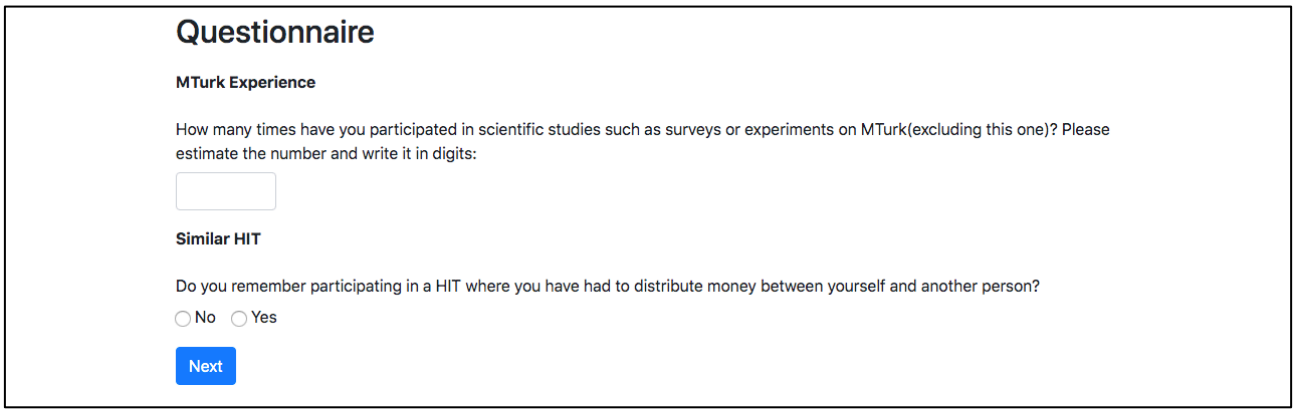


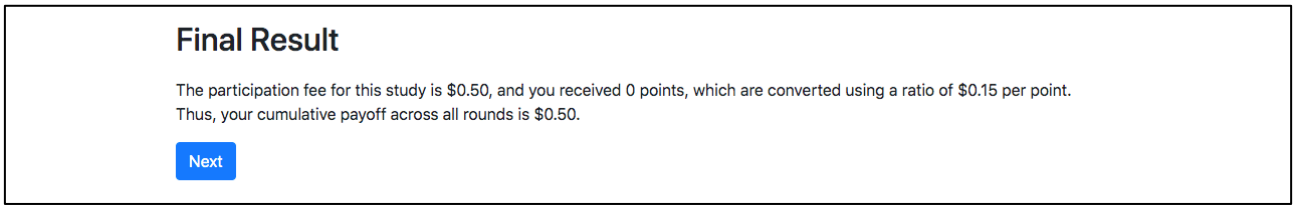
Income

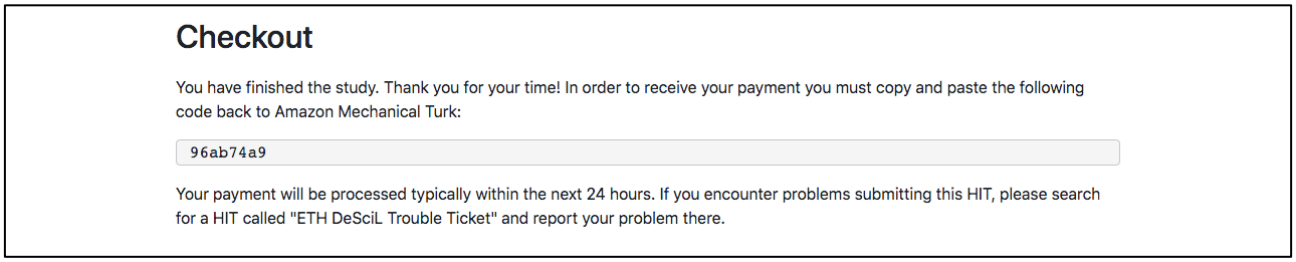
What was your total annual household income last year (2018) before taxes?

- ○ less than $5,000
- ○ $5,000 to 9,999
- ○ $10,000 to 14,999
- ○ $15,000 to 19,999
- ○ $20,000 to 29,999
- ○ $30,000 to 39,999
- ○ $40,000 to 49,999
- ○ $50,000 to 74,999
- ○ $75,000 to 99,999
- ○ $100,000 to 124,999
- ○ $125,000 to 149,999
- ○ $150,000 or more
- ○ do not know

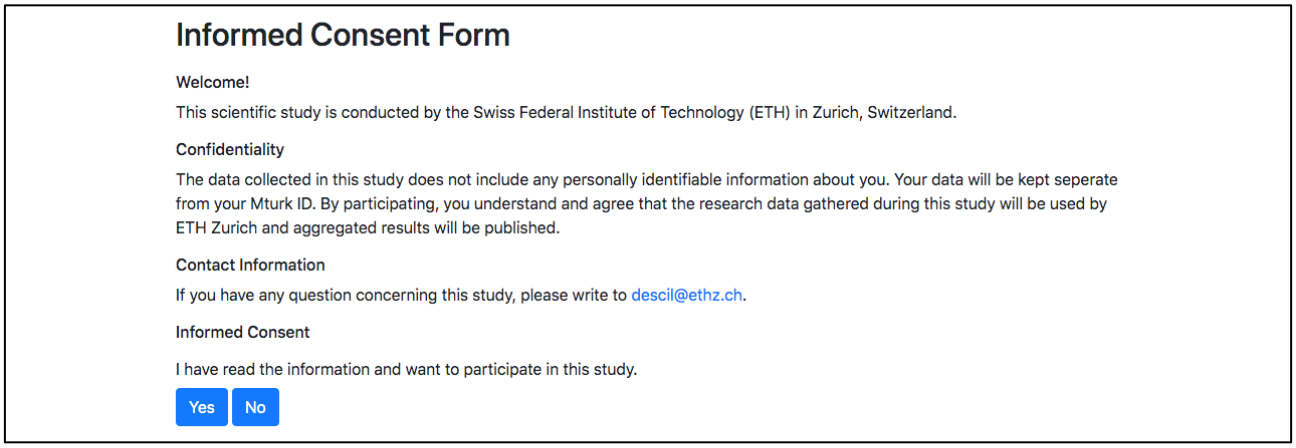
Next

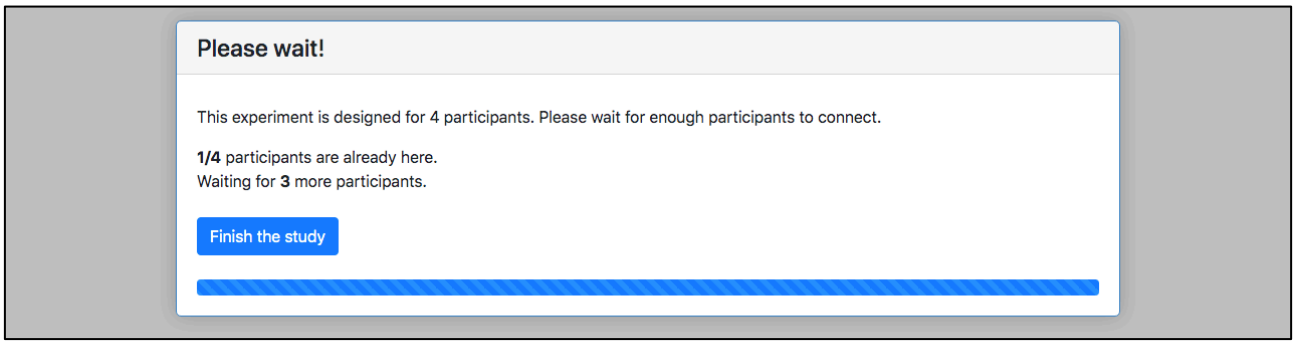


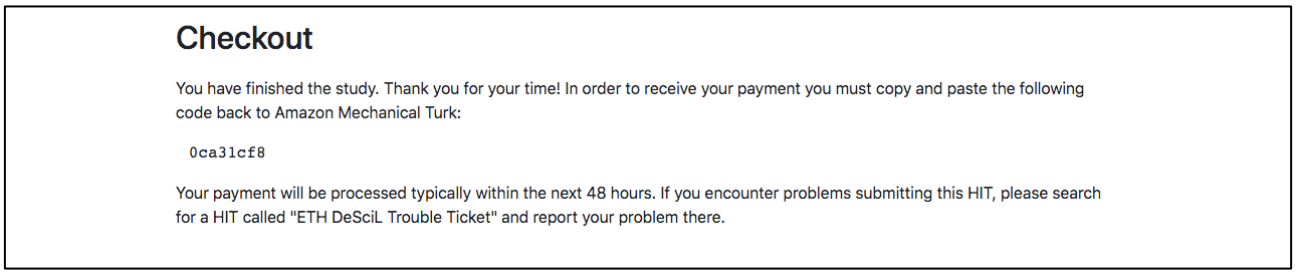




10.1.4 Dropout







10.2 Randomization Control

In this chapter of the appendix, the relationship between the assignment of the treatment condition and all the control variables collected in the post-experimental survey were tested. Each relationship is displayed visually through contingency tables or histograms and then statistically tested.

Supplementary table 1: Participants' distribution between the treatments on the basis of their native language (dichotomy: native English or not)

	Interpersonal	Intergroup	Representatives
Non-native English	7	4	6
Native English	47	47	48

The pairwise comparison between treatment conditions does not display any significant relationship between the treatment assignment and participants' native language.

Interpersonal-intergroup comparison: two-sided Fisher exact test, p = 0.53
Intergroup-intergroup between representatives comparison: two-sided Fisher exact test, p = 0.74
Interpersonal-intergroup between representatives comparison: two-sided Fisher exact test, p = 0.84

Supplementary table 2: Participants' distribution between the treatments on the basis of their education level

	Interpersonal	Intergroup	Representatives
Some High school, no degree	-	-	-
High school Diploma	6	5	8
Some college, no degree	14	13	10
Associate's Degree	8	8	11
Bachelor's Degree	24	22	21
Graduate Degree (Master's or Ph. D.)	2	3	4

The Chi squared test does not show any significant relationship between the treatment assignment and participants' education level ($p = 0.944$).

Since the categories in the variable employment status are not exclusive categories, each value is operationalized as a dichotomous variable (i.e. full-time employee or not). For the sake of simplicity and brevity, supplementary table 3 displays the values as if they were a fraction of all the participants in one condition: 39 out of 54 participants in the interpersonal condition are full-time employees, therefore 15 out of 54 participants in this condition are not full-time employees.

Supplementary table 3: Participants' distribution between the treatments on the basis of their employment status

	Interpersonal	Intergroup	Representatives
Full-time employee	39/54	35/51	35/54
Part-time employee	4/54	1/51	5/54
Self-employed	7/54	7/51	7/54
Out of work and looking for work	2/54	3/51	2/54
Homemaker	2/54	1/51	4/54
Student	1/54	2/51	0/54
Retired or permanently disabled	2/54	2/51	1/54

The pairwise comparison between treatment conditions does not display any significant relationship between the treatment assignment and all the dichotomous variables in supplementary table 3.

Full-time employee

Interpersonal-intergroup comparison: two-sided Fisher exact test, p = 0.83

Intergroup-intergroup between representatives comparison: two-sided Fisher exact test, p = 0.84

Interpersonal-intergroup between representatives comparison: two-sided Fisher exact test, p = 0.53

Part-time employee

Interpersonal-intergroup comparison: two-sided Fisher exact test, p = 0.36

Intergroup-intergroup between representatives comparison: two-sided Fisher exact test, p = 0.20

Interpersonal-intergroup between representatives comparison: two-sided Fisher exact test, p = 1

Self-employed

Interpersonal-intergroup comparison: two-sided Fisher exact test, p = 1

Intergroup-intergroup between representatives comparison: two-sided Fisher exact test, p = 1

Interpersonal-intergroup between representatives comparison: two-sided Fisher exact test, p = 1

Out of work and looking for work

Interpersonal-intergroup comparison: two-sided Fisher exact test, p = 0.67

Intergroup-intergroup between representatives comparison: two-sided Fisher exact test, p = 0.67

Interpersonal-intergroup between representatives comparison: two-sided Fisher exact test, p = 1

Homemaker

Interpersonal-intergroup comparison: two-sided Fisher exact test, p = 1

Intergroup-intergroup between representatives comparison: two-sided Fisher exact test, p = 0.36

Interpersonal-intergroup between representatives comparison: two-sided Fisher exact test, p = 0.68

Student

Interpersonal-intergroup comparison: two-sided Fisher exact test, p = 1

Intergroup-intergroup between representatives comparison: two-sided Fisher exact test, p = 0.23

Interpersonal-intergroup between representatives comparison: two-sided Fisher exact test, p = 0.50

Retired or permanently disabled

Interpersonal-intergroup comparison: two-sided Fisher exact test, p = 1

Intergroup-intergroup between representatives comparison: two-sided Fisher exact test, p = 0.61

Interpersonal-intergroup between representatives comparison: two-sided Fisher exact test, p = 1

Supplementary table 4: Participants' distribution between the treatments on the basis of experience with similar games

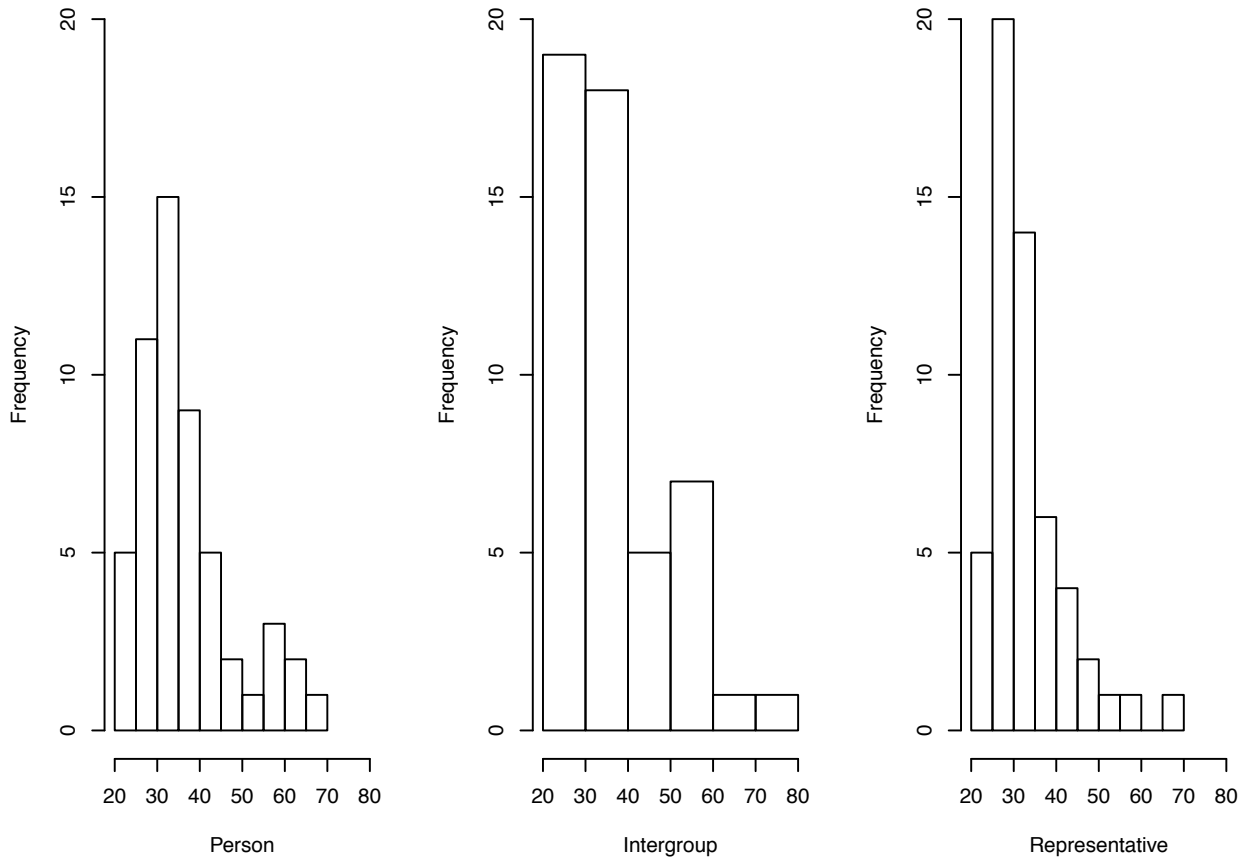
	Interpersonal	Intergroup	Representatives
No Experience	22	16	21
Experience	32	35	33

The pairwise comparison between treatment conditions does not display any significant relationship between the treatment assignment and participants' previous experience with similar games.

Interpersonal-intergroup comparison: two-sided Fisher exact test, p = 0.42

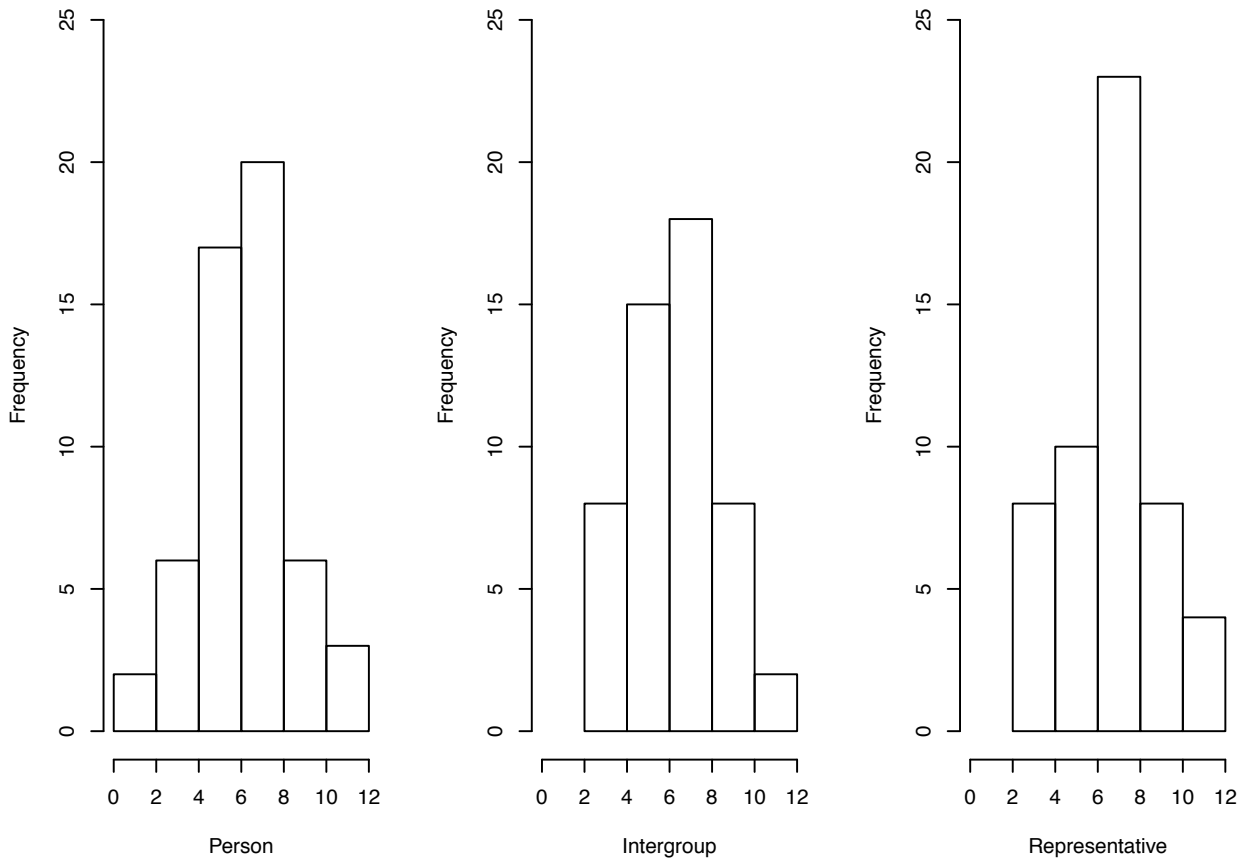
Intergroup-intergroup between representatives comparison: two-sided Fisher exact test, p = 0.54

Interpersonal-intergroup between representatives comparison: two-sided Fisher exact test, p = 1



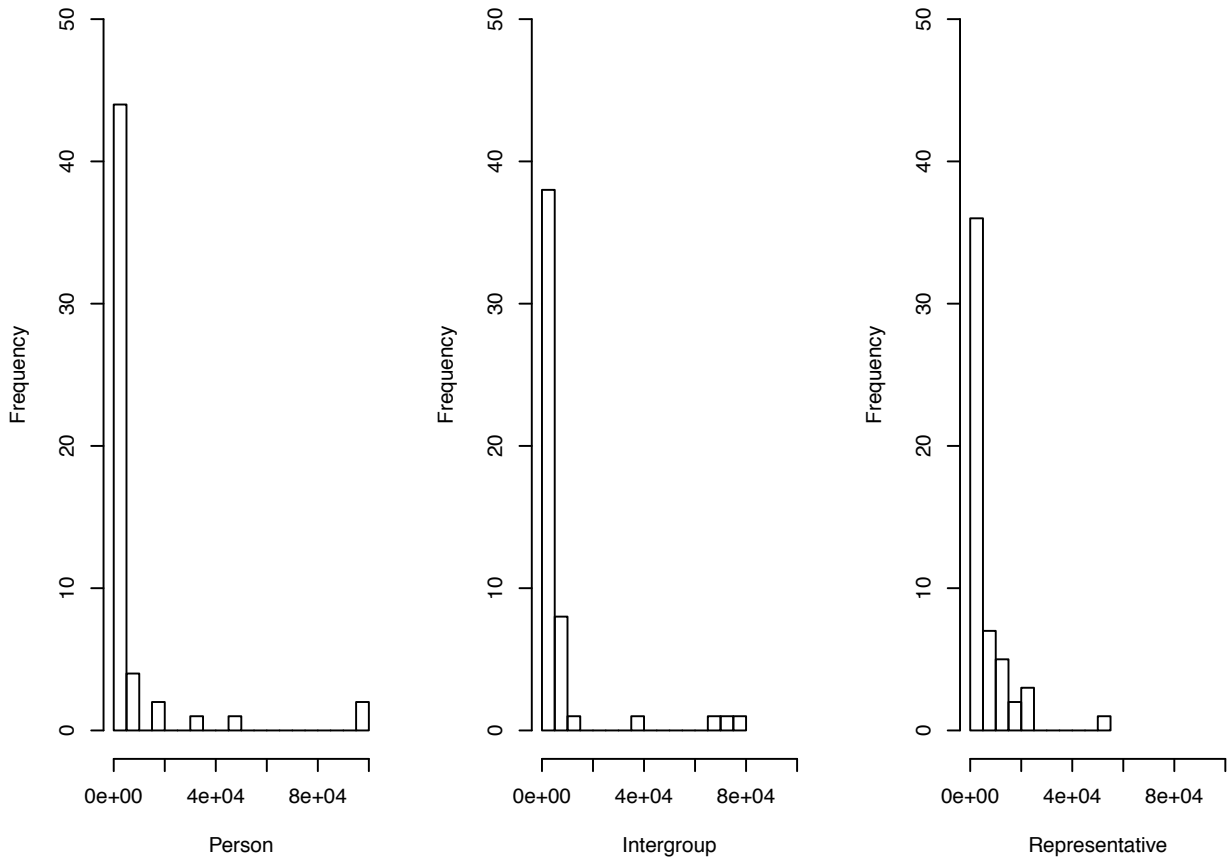
Supplementary figure 1. Distribution of variable age: a comparison between the three conditions.

The analysis of variance shows only a small relationship between the treatment assignment and age (Eta squared of 0.02).



Supplementary figure 2. Distribution of variable income: a comparison between the three conditions.

The analysis of variance does not show any relationship between the treatment assignment and income (Eta squared of 0.004).



Supplementary figure 3. Distribution of variable MTurk experience: a comparison between the three conditions.

The analysis of variance does not show any relationship between the treatment assignment and participants' general experience with MTurk (Eta squared of 0.002).

10.3 Supplementary Analysis: Controlling for the Validity of the Intergroup Treatment

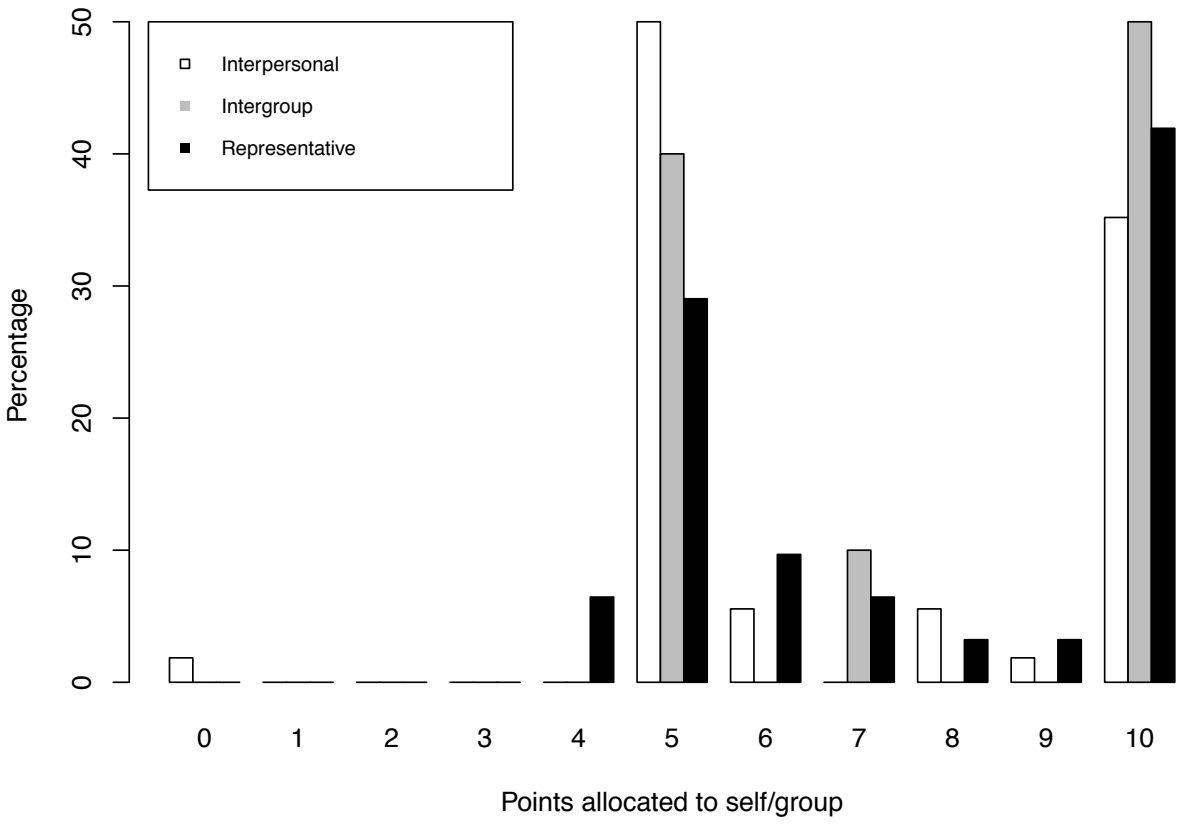
The additional analysis is conducted by filtering for the variable considering the validity of the intergroup treatment. Supplementary figure 4 displays the filtered distribution of allocation for each treatment conditions. As the following hypotheses tests display, increasing the validity of the treatment does not improve the results.

Hypothesis 1: In situations of intergroup relations conducted by two members of different groups, subjects are less cooperative towards out-group members than in situations of interpersonal relations.

The Wilcoxon rank-sum test ($p = 0.20$) does not show a significant difference in the allocation distribution between the interpersonal and the intergroup condition.

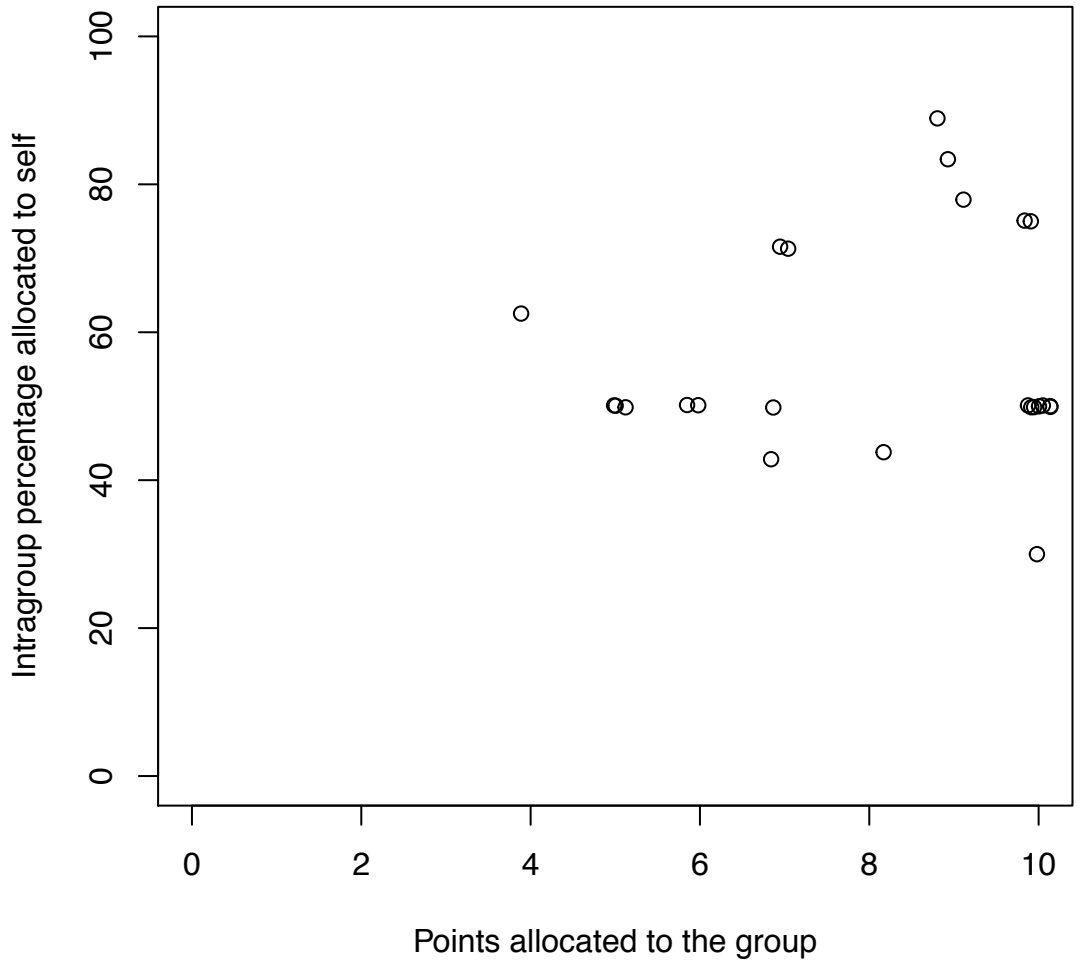
Hypothesis 2: In situations of intergroup relations conducted by representatives, subjects are less cooperative towards out-group members than in situations of intergroup relations conducted by two members of different groups.

The Wilcoxon rank-sum test ($p = 0.70$) does not show a significant difference in the allocation distribution between the intergroup and the intergroup between representatives condition.
It has to be noted that the filtering process created some ties between the observations that could have influenced the calculation of the p.



Supplementary figure 4. Filtered distribution of allocation to self/group: a comparison between the three conditions (for comparability, the points represented in the figure for the intergroup condition between representatives do not represent the group allocation, but they are considered as the points each member of the group receives)

10.4 Graphical Representation of the Relation Between the Allocated Points in the Dictator Game and the Self-Reported Data on the Intragroup Distribution of Points



Supplementary figure 5. Relation between dictator game allocations and belief on the intragroup allocation (for comparability, the points represented in the figure for the intergroup condition between representatives do not represent the group allocation, but they are considered as the points each member of the group receives)

Universität Zürich[UZH]

Philosophische Fakultät
Studiendekanat

Universität Zürich
Philosophische Fakultät
Studiendekanat
Rämistrasse 69
CH-8001 Zürich
www.phil.uzh.ch

Selbstständigkeitserklärung

Hiermit erkläre ich, dass die Masterarbeit von mir selbst ohne unerlaubte Beihilfe verfasst worden ist und ich die Grundsätze wissenschaftlicher Redlichkeit einhalte (vgl. dazu: http://www.uzh.ch/de/studies/teaching/plagiate.html).

Zurich, 03.06.2019 .....

Ort und Datum Unterschrift